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TROPICAL DISEASES BULLETIN

Vol. 2. 1913. No. 8.

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General Editor:
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COMMONWEALTH MYCOLOGICAL INSTITUTE
26 MAY 1971

London:
TROPICAL DISEASES BUREAU,
Imperial Institute, S.W.

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TROPICAL DISEASES BUREAU.

TROPICAL DISEASES BULLETIN.

Vol. 2.] 1913. [No 8.

CHOLERA.

SANTOLIQUIDO. **Les Administrations Sanitaires dans la Lutte contre le Choléra. (Conférence faite à la Société Impériale de Médecine de Constantinople.)**—*Bull. Office Internat. d'Hyg. Publique.* 1913. June. Vol. 5. No. 6. pp. 969-979.

Santoliquido discusses the prophylactic measures to be carried out in an infected country for its own safety and to protect uninfected countries. He dwells on the fact that for practical purposes cholera is carried exclusively by man. He believes that genuine cholera nearly always precedes official cholera. He shows how it is impossible by any practicable precautionary measures at the frontiers to prevent the entrance of cholera, and how difficult it is after the disease has gained entrance to trace the point of entrance. The real cause of this difficulty is the healthy carrier. It would be quite impossible to institute a satisfactory search for carriers in a ship free from the disease or in the trains crossing the various frontiers perpetually. While these healthy carriers are a source of danger, they are not highly dangerous and strict supervision at the frontiers by detecting actual cases is an invaluable procedure.

The duties devolving on the sanitary authorities of infected countries as laid down by the last international sanitary convention are discussed. He agrees that ordinary merchandise as such has not been snown to spread cholera, but of course all linen and other personal effects of patients must be disinfected. The part played by different foods in carrying infection is discussed at considerable length and Santoliquido gives cases to show that the sending of food supplies from infected to uninfected countries is, as far as is known, permissible.

The author in dealing with prophylaxis in an infected country states "He may take cholera who will." This he illustrates by an outbreak of cholera in an asylum in Italy where tying the hands of the patients and confining them all to bed, with untying of the hands and disinfecting them before meals was followed by an immediate cessation of the epidemic.

(31783—2.) Wt. P 1498—11. 1800. 10/13. D & S.

Given pure water and food, personal cleanliness and disinfection of the hands before meals mean personal safety. As a practical example of what ought to be done in checking cholera locally he gives the procedure he adopted at Naples. The treatment of patient, personal effects, house, neighbouring houses, search for carriers around patient and in all shops selling foods of different sorts, strict supervision of hotel and lodging houses, are detailed and Santoliquido expresses the conviction that such methods guarantee success.

The protection of the country locally is the best protection possible for neighbouring countries, but in addition the prevention of patients leaving the country is a duty of great importance and was effectively carried out by Italy in the late epidemic. A short reference to the anti-cholera activity of Turkey completes the paper.

W. J. Penfold.

POTTEVIN (Henri). **Les Bases Scientifiques de la Lutte contre le Choléra. (Conférence faite à la Société Impériale de Médecine de Constantinople.)**—*Bull. Office Internat. d'Hyg. Publique.* 1913. June. Vol. 5. No. 6. pp. 953-968.

After a few introductory remarks on the diagnosis of the disease, its seasonal prevalence, and the virulence of the virus as judged by the incidence and mortality of the disease in India, the author proceeds to discuss means of prophylaxis under three heads:—Those applying to man, water, and other possible vehicles of infection.

In the case of man the first essential is to identify those who carry the infection. This is done by clinical examination supported by bacteriological examination in doubtful cases, and in the search for healthy carriers. The routine bacteriological method advised by Pottevin consists in making 1st stained and hanging drop preparations of a suitable flake of the faeces; 2nd, plating out similar flakes on alkaline agar and on Dieudonné's medium; 3rd, adding 1 cc. of suspected material to 50 cc. of peptone water and allowing that to grow at 37°C. for six hours and then plating out. Colonies on these various plates are examined and vibrios tested for agglutination in hanging drop. Suspected vibrios are then isolated in pure culture and tested completely by agglutination and Pfeiffer's reaction.

The agglutination reaction by patients' serum is not of great practical value as it appears late in the history of the case.

The morphology of the *V. cholerae* is discussed briefly by Pottevin without anything new being added to this subject. The absolute test he employs to determine whether the organism is a genuine cholera strain or not is the power to agglutinate to $\frac{1}{1000}$ with a specific serum which has a titre of not less than $\frac{1}{4000}$ tested against the specific organism used to produce it.

The Pfeiffer reaction is unnecessary in practice since no evidence exists of a vibrio which agglutinates in a high degree with a specific serum, not responding to Pfeiffer's test.

In cases clinically like cholera where in spite of repeated examination the vibrio cannot be found it is undoubtedly best to

act as if they were definite cases. In children the difficulty of cholera-diagnosis makes Pottevin suggest that in all cases of gastro-enteritis, or meningitis in the young, a complete bacteriological examination ought to be made.

The joint occurrence of dysentery and cholera in the same patient tends to alter materially the clinical picture. Cramps are often absent as are also rice-watery stools, and of course marked depression of temperature is not infrequent in dysentery. It has further been shown at Tor that cholera carriers are relatively frequent amongst the dysentery patients.

The duration of the cholera-carrier state in convalescents was worked out in more than 3,000 cases in Italy, in the years 1910 and 1911, when it was found that 97 per cent. were free at the end of a month. It appears highly exceptional to carry the germ for longer than two months.

Intermittency of the carrier-state appears to occur, but Pottevin believes three successive negative examinations made at two day intervals may be taken as evidence of complete cessation. The proportion of healthy carriers found in the entourage of patients varies greatly according to results published in different countries, from 22 per 100 patients in Germany to 117 in Roumania. The search on frontiers for carriers amongst healthy people who have come from an infected country has never given a high percentage of positives, and it is only recommended by Pottevin in the case of those travellers who have been in actual contact with a cholera case on the journey.

Those measures directed to the prevention of cholera patients leaving their respective countries and the strict supervision during the journey of large masses of people leaving an infected country are insisted upon by Pottevin as essential in cholera prophylaxis.

Having found the infected and searched all the surrounding persons for carriers, suitable isolation is practised and the usual methods of disinfection. River or sea water is only a temporary support for the virus. Pottevin insists on the need for a water supply above suspicion. He looks upon as useless any guarantee that bacteriology can give of purity of water in the face of a cholera epidemic. He suggests the sterilization of doubtful water by six hours' contact with hypochlorite of soda; 1 mgm. per litre is an efficient quantity and does not give an unpleasant taste to the water.

Of other possible agents of infection articles of diet are considered. Certain foods may act as good culture media and such foods require strict supervision. The prevention of carriers handling food is obviously important.

That the danger of food carriage of infection is easily overestimated is suggested by much practical experience, *e.g.*, the free passage of fruit between South Italy on the one hand and Central Italy, Western Italy and Switzerland on the other, never occasioned a single case of cholera though South Italy was severely infected.

Personal belongings must be treated as in the case of other infectious diseases.

W. J. P.

POTTEVIN. **Contribution à l'Etiologie du Choléra.**—*Bull. Office Internat. d'Hyg. Publique.* 1913. July. Vol. 5. No. 7. pp. 1158-1174.

Observations made at Tor on the carrier question in cholera constitute the first portion of the report. In the winter 1912-1913 over 14,000 samples of faeces were examined, mainly derived from Egyptian pilgrims. 7·4 per thousand showed vibrios and in 69 cases they were cholera vibrios. 1·7 per thousand of healthy carriers of cholera germs were found in over 13,000 pilgrims examined. The figure is higher than that obtained in previous work on the subject. The pilgrims could be sharply divided, according to the Egyptian route they took, into two groups, one of which consisted almost entirely of poor and decrepit people while the others were much better off. The carriers were much more numerous in the former group.

Sick carriers, i.e., those carrying the specific germ but sick of some malady other than cholera were frequent, reaching from 79 to 110 per thousand. The dysenteric patients especially are frequent carriers.

Study of the Vibrios isolated.—The total number was 127. The following tests were applied to them. (1) Liquefaction of gelatine; (2) cholera-red reaction; (3) agglutination; (4) Pfeiffer's reaction; (5) deviation of complement.

All the vibrios which were specifically agglutinable, liquefied gelatine, some very quickly and others very slightly after a week. 84 per cent. of the agglutinable vibrios gave a positive cholera-red reaction, and it appears that this reaction changes in the case of the same strain easily; negative and positive results with vibrios from the same patient do not appear to be rare.

In respect of agglutination, it was found that strains agglutinating highly on isolation, frequently lost the power to do so, and on the other hand non-agglutinating strains took on the agglutinating power almost as suddenly. Both agglutinating and non-agglutinating varieties were found simultaneously in the same intestine.

Pfeiffer's reaction was always positive with the agglutinating strains and occasionally with strains that did not agglutinate.

Deviation of complement was more or less complete in the case of all agglutinating strains but it was also complete in some non-agglutinating vibrios. 19·5 per cent. of the agglutinating strains were haemolytic.

The second portion of the paper deals with the nature of cholera toxins and antitoxins and gives similar results to those recorded in another abstract of the same author's work appearing in this number.

The effects of the antitoxin on a few clinical cases are also mentioned and Pottevin believes it to have been of use in some. The doses used were enormous, one patient receiving 580 cc. of serum.

W. J. P.

CHAZARAIN-WETZEL. **Accès Pernicieux Cholériforme.** [A Pernicious Cholera-like Attack.]—*Bull. Soc. Méd.-Chirurg de l'Indochine.* 1913. July. Vol. 4. No. 7. pp. 324-326.

The case was that of a European of 45 who gave a history of two previous attacks of cholera. This attack occurred in the middle of the summer. The diarrhoea was very severe and muscular cramps occurred the first day. On examination his temperature was 35° C., he was covered with a cold, clammy sweat, his voice was normal, extremities cold, pulse feeble, face cadaveric, eyes fixed and staring. He had the feeling of having an enormous weight in the pit of the stomach, a pause occurred between inspiration and expiration, urine was suppressed, evacuations were serous with greyish flocculi and of a very faecal odour, the tongue was coated and patient thirsty. Vomiting was entirely absent.

He was treated symptomatically and in the evening of the same day showed marked improvement and in a few days became entirely well. The case was brought forward for differential diagnosis; at first sight it looked like cholera but the normal voice and absence of vomiting and the nature of the motions were against that.

The author suggests that it may have been an infection with some member of the food poisoning group of organisms but the surrounding circumstances did not favour this: he prefers the view that it was a cholera-like attack, peculiar to the locality, of which the cause does not yet appear to be ascertained.

W. J. P.

GOÉRÉ (J.). **Le Choléra à Ferryville (Tunisie) en 1911. Etude Clinique et Bactériologique.**—*Arch. de Méd. et Pharm. Navales.* 1913. July. Vol. 100. No. 7. pp. 52-60; and Aug. No. 8. pp. 124-137.

The water locally is very bad having always at least 1,000 to 1,200 colon bacilli per litre. The naval medical authorities elaborated a precautionary scheme of defence against the disease. Their first requirement was that all water for consumption should be boiled. After ten days' experience of this it was given up as the water was objectionable to the personnel and the method was also difficult to carry out. As a substitute, water, after bacteriological examination had failed to find the *V. cholera,* was used, until cholera cases commenced to be sent to hospital, after which boiling of the water was again resorted to.

The examination of the water for the *V. cholera* was carried out by METSCHNIKOFF's method, by means of which it can be detected the next day after the laboratory receives the sample.

Attempts to sterilize the water with ultraviolet rays are described but the local water was too muddy for this method to be effective. An account of the order of occurrence of cases is given. The first was reported on September 25th. A native who was flying from an infected district was found infected with cholera, he was lying on the ground soiled with dejections, and cold. A tent was placed over him and he was treated on the spot; he died

on the eighth day after. Tuberculosis and typhoid pavilions of the local hospital were then used to accommodate the cases which occurred in a straggling fashion from time to time. The diagnosis in all cases was confirmed by bacteriological examination. The cases were promptly isolated as also a number of healthy carriers. In all 16 cases occurred at Ferryville; 8 of these were in hospital; 9 died of which only one was a hospital case. Seven healthy carriers were discovered.

Goéré describes a series of five cases. The first case was that of a sea-going engineer who had for some time before been treated for jaundice and obstinate constipation. The case was typical and the description vivid but contains nothing new. The second case was mild, it commenced 21st October and temperature was never below 36·4° C. It was treated by anticholera serum from the Pasteur Institute, 100 cc. being given. The agglutination test was not positive on the 25th or 28th October, but was positive on the 8th November tested against the vibrio obtained from the patient himself. The other three clinical histories given present nothing very unusual except the administration of very large and frequent doses of serum in treatment, which appeared to be useful.

W. J. P.

Roelfsema (F. H.). **Enkele korte Opmerkingen over Verloop en Behandeling van de Cholera in het Militair Hospital te Semarang in de Jaren 1910-1912.** [Short Observations on the Course and Treatment of Cholera in the Military Hospital of Semarang in the years 1910-1912.]—*Geneeskundig Tijdschr. v. Nederl.-Indië.* 1913. Vol. 53. No. 3. pp. 446-448.

The numbers treated during the three years were small, in the third year only 24. The mortality rate fell from 60 per cent. in 1910 to 25 per cent. in 1912. This appears to have been due to diminution in the virulence of the organism. The author found injection of hypertonic saline useful in treatment.

W. J. P.

Freise (W.). **Die Epidemiologie der asiatischen Cholera seit 1899 (VI. Pandemie).** [The Epidemiology of Asiatic Cholera since 1899. The 6th Pandemic.]—*Beihefte z. Arch. f. Schiffs- u. Tropen-Hyg.* 1913. June. Vol. 17. Beiheft 5. 81 pp. [pp. 289-365.] With tables, maps, and 1 curve.

This monograph is a summary of the distribution of cholera during each year from 1899 to 1911. The method of treatment of the subject is to give a list of the literature quoted at the commencement of the section dealing with the disease during the year in review and then, starting from India, to trace the spread to all the neighbouring countries and so throughout the old world. This is done for each year as far as possible from official records. Then follow synoptic tables showing at a glance the countries affected each year. Further tables are given showing the course of the epidemics in relationship to season and province in different countries, and also the effect of the pilgrims on the cholera death rate in Mecca.

W. J. P.

Laboratory and Experimental.

Sgalitzer (Max) & Löwy (Otto). **Ueber die Verwendbarkeit der Blutalkalibouillon als Anreicherungsmittel für Choleravibrionen.** [On the Use of Alkaline Blood-broth as an enriching Medium for the *Vibrio cholerae.*]—*Centralbl. f. Bakt.* 1. Abt., Orig. 1913. July 3. Vol. 69. No. 7. pp. 556-560.

The authors pass in review peptone water, alkaline ox bile, and alkaline blood-peptone water as liquid enriching media for the *V. cholerae* and conclude that they are all inferior to Kraus's alkaline blood broth. Opinions on the latter vary, but that appears to be due to the fact that the medium, though made up in the same way, is different in different batches; each batch must be tested as to its individual suitability. If this be done the authors believe it to be the best fluid enriching medium for *Vibrio cholerae.*

They detail a series of experiments to show the effect of adding to 100 cc. of neutral litmus broth different quantities of Kraus's blood-alkali, on the growth of a large number of different bacteria occurring in faeces. They found in the particular sample they used that if the enriching culture were to grow six hours before plating then 20 cc. was the best quantity to add to get the most specific effect.

W. J. P.

Kabeshima (T.). **Ueber einen Hämoglobinextrakt-Soda-Agar als Elektivnährboden für Choleravibrionen.** [On an Alkaline Haemoglobin-Extract-Agar as a selective Medium in Cholera Diagnosis.] — *Centralbl. f. Bakt.* 1. Abt., Orig. 1913. Aug. 4. Vol. 70. No. 3-4. pp. 202-208.

Kabeshima discusses first of all the disadvantages of the special cholera-agar media of Dieudonné, Esch and Pilon. In his research he set himself the task of producing a suitable agar for the plating out of cholera stools which could be used quickly, made easily, and would also suppress effectively non-cholera vibrios as well as the members of the typhoid-coli group.

For this purpose he suggests as the result of his work an alkaline agar to which Pfeiffer's haemoglobin extract in suitable quantity is added. He tested this agar against the above-mentioned agars as controls in the case of a large number of laboratory strains of cholera, other vibrios and various members of the typhoid-coli group and also in the case of the stools from 21 patients suffering from diarrhœa, which stools he artificially infected with *V. cholerae.*

These experiments showed that Kabeshima's agar was an excellent medium for all the cholera strains, it restrained some non-cholera vibrios, and all the members of the typhoid-coli group but not cocci; in the case of the artificial cholera stools nearly always pure cultures of *V. cholerae* were obtained.

Dieudonné's blood agar was found to permit the growth of *B. alcaligenes* and other coliform organisms in many cases. The agar of Esch allowed the growth of all organisms except Shiga's dysentery strain so that it seems to have only the slightest selective capacity.

Pilon's agar was effective in suppressing all vibrios but *V. cholerae.* These laboratory experiments indicated that Kabeshima's medium satisfied the conditions better than any of the others and he was able to confirm this in an actual epidemic of cholera where he compared the same media and found similar results, with this difference, that Pilon's medium definitely delayed the growth of the colonies of genuine *V. cholerae* on the plates.

W. J. P.

LOGIE (W. J.). **On the Inhibition of the Cholera-Red Reaction by Certain Nitrite-Destroying Organisms and on the Mutual Inhibition of *B. dysenteriae* (Flexner) and *V. cholerae* when grown together.**—*Jl. of Hygiene.* 1913. July. Vol. 13. No. 2. pp. 162-167.

Logie shows that if *V. cholerae* and *B. coli* be grown together and the culture be tested for the cholera-red reaction after twenty-four hours' growth, it may be absent. This he found due to the fact that the nitrite produced by the *V. cholerae* was destroyed by *B. coli.* If a little nitrite were added to the mixed culture the reaction was obtained. By testing for the presence of nitrite Logie was able to demonstrate its presence in the symbiotic cultures after a few hours' growth, but after 15 to 24 hours the whole of the nitrite is destroyed. *B. enteriditis* of GAERTNER has the same effect when grown in symbiosis with the *V. cholerae.* The *B. typhosus, B. paratyphosus* A and also B, the *B. dysenteriae* (Flexner), though they destroy nitrites, fail to do so to any extent when grown in symbiosis with the *V. cholerae,* hence they do not abolish the cholera-red reaction. Logie has found this effect to be due to the mutual inhibition of the growth of the two organisms.

W. J. P.

PUNTONI (Vittorio). **L'Azione di due Microbi dell' Aria sulle Proprietà Biologiche del Vibrione Colerigeno.** [The Action of two Air-Organisms on the Biological Properties of the *Vibrio cholerae.*] — *Giorn. R. Soc. Italiana d'Igiene.* 1913. July 31. Vol. 35. No. 7. pp. 289-299.

The author draws attention to the modifications caused by sarcina in the agglutination, virulence and pigment producing power of the specific cholera germ. Two organisms obtained from air are fully described by him in the paper, which have also marked effect on the *Vibrio cholerae* when grown in symbiosis with it.

He found that, if plates on which the vibrios were growing were exposed to the air, in the neighbourhood of the colonies of the air organisms the colonies of the cholera strain assumed a brown colour tending to violet. Growth at air temperature is better for the pigment production than at 37° C. Filtrates of these air organisms have not this chromogenic power, and the actual strains tend to lose it in culture. The pigment is not destroyed by strong H_2SO_4 or NaOH.

Two inagglutinable strains of *V. cholerae* were grown in symbiosis with these air organisms for five passages of about one week each, after which one was clumped by a 1 : 500 dilution of a serum of high titre; the other strain did not acquire the agglutinating power at all. Some evidence is given that these organisms cultivated with the cholera germ increase its virulence.

W. J. P.

Horowitz (L.). **Zur Frage über Cholera-Toxine und Antitoxine.** [On the Question of Cholera-Toxin and Antitoxin.] — *Zeitschr. f. Immunitätsforsch. u. exper. Therapie.* 1913. Aug. 5. Vol. 19. No. 1. pp. 44-65.

The paper is of a very diffuse character. After an introductory survey of the literature of this question the author proceeds to her own results.

The media used for the cultivation of the *V. cholerae* were broth, serum-broth, glucose-broth and the contents of the small intestine of a dog obtained from a suitable fistula: the dog was fed on casein before the samples were taken. The filtrates of these various broths were tested on guinea-pigs. The glucose-broth filtrate was found to be the most toxic and Horowitz was able to convince herself that the toxicity of the filtrate was not proportional to the vitality of the culture, but rather to the number of dead bacteria present in it. The glucose-broths were sterile on the third day. Marked acidity developed in the cultures and the acid produced is believed by Horowitz to be a much more delicate extracting agent than those commonly employed. In this way extracts were obtained fatal to guinea-pigs in ½ cc. doses. Evidence is brought forward to show that the toxicity of these solutions is due to endotoxin. It is heat-stable, withstanding boiling for 15 to 20 minutes.

Two animals immunised with the above filtrate showed that serum could be produced which could remove the toxicity of the broth filtrates; the serum so obtained however had very low agglutinating and bacteriolytic powers.

Whole glucose broth cultures of 3 or 4 days age produced sera which had high agglutinating and bacteriolytic titres and had also the power in fair degree of destroying the toxicity of filtrates. Sera on the other hand made by immunizing the rabbits with heated agar cultures had high agglutinating and bacteriolytic titres but did not destroy to any great extent the toxicity of filtrates. Horowitz believes the toxin-destroying body of these serums is not the same as the bacteriolysin but is related to it as a peptolytic is to a proteolytic ferment.

In experimental infections of animals a serum made by the injection of heated cholera vibrios is not so efficacious as a serum made by the injection of a three or four day old broth culture.

The destruction of toxin by any of the sera mentioned is a complement action. To obtain the measure of this power possessed by any serum, one must use the filtrate as toxin and not vibrios, since their lysis uses up the complement, and so hides the

toxinolytic effects of which the serum is capable in the presence of complement.

The effect of *Sarcina lutea* in raising the virulence of the *V. cholerae*, first pointed out by METCHNIKOFF, has been confirmed by Horowitz.

W. J. P.

POTTEVIN (Henri). **Toxine et Antitoxine Cholériques.**—*Bull. Soc. Path. Exot.* 1913. June. Vol. 6. No. 6. pp. 409-413.

The author reviews the main results obtained by different workers up to the present with cholera toxins. He believes that his results reconcile to some extent the conflicting opinions.

He used for his work three vibrios: one vibrio A, isolated in Italy, and a second one identical with A, No. 70 of the Berlin collection; these two produced a toxin which is rapidly fatal to young rabbits and pigeons when injected intravenously and is strongly haemolytic. Both toxin and haemolysin are thermolabile. One hour at 50° C. destroys the haemolysin totally and the toxin in great part. The toxic effect that is left is not removed even by prolonged heating at 100° C. The heat-stable fraction has only 1/4 to 1/8 of the toxic power of the original and does not affect pigeons at all. The third *Vibrio cholerae*, isolated in Constantinople in 1913, gave a toxin similar to that described by ROUX, METCHNIKOFF and SALIMBENI. Intravenously in rabbits it caused death but never suddenly irrespective of dose. It is inactive in pigeons and is relatively thermostable. Immunization carried out in animals produced an antitoxin to the thermolabile poison, but no antibody to the thermostable fraction could be shown to exist in the serums produced by immunizing with either type of organism.

W. J. P.

POTTEVIN (H.) & VIOLLE (H.). **Sur les Vibrions et leur Toxines.** [On the Vibrios and their Toxins.]—*Compt. Rend. Acad. Sciences.* 1913. June 30. Vol. 156. No. 26. pp. 2029-2031.

The authors describe a Vibrio isolated from the water of the Seine at Saint Cloud this year which gave all the characters of Koch's comma bacillus including positive agglutination and Pfeiffer's test. The organism produced a toxin and haemolysin.

The authors were able to absorb the haemolysin by red cells and to leave the toxin but slightly weakened, so that they believe the two to be distinct. They further show that by subdural administration sudden death is induced by a thermolabile poison without any haemolysis occurring.

W. J. P.

CRASTER (C. V.). **The Properties and Agglutinations of some Non-pathogenic Vibrios.**—*Jl. of Infectious Diseases.* 1913. May. Vol. 12. No. 3. pp. 472-480. With 4 text-figs.

Craster gives an account of over 100 non-cholera vibrios. They were obtained in the course of routine examinations at the Quarantine Station, New York. Compared with *V. cholerae* morphologically they may be similar or may show long forms with blunt

ends or again short forms with pointed ends. They are all monoflagellates and highly motile. In alkaline broth and peptone water they form clouds and pellicles, as *V. cholerae*. They liquefy gelatine as a rule more quickly than *V. cholerae*. They are haemolytic, and Craster suggests this differentiates them from *V. cholerae*, but that view is not very general now. They ferment sugars similarly to *V. cholerae*. In the case of no strain was a typical cholera-red reaction given. They form colonies on plates which are more globose and granular than those of cholera, and are inclined to turn up when touched with the platinum loop while cholera colonies are inclined to run.

They have not such a faecal odour as genuine cholera cultures. Three of these vibrios were pigment-formers and one was a gas-former. None were pathogenic to guinea-pigs intraperitoneally in doses up to 1 agar slope.

None of these strains agglutinated with a genuine cholera serum to $\frac{1}{10}$ dilution. Twenty of them were used to make special sera and the interagglutinations of these twenty members of the group were worked out. All the sera had very low titres and a positive reaction at $\frac{1}{40}$ was taken as standard.

W. J. P.

PUNTONI (Vittorio). **I Vibrioni "Inagglutinabili." Loro Rapporti con il Vibrione Colerigeno e loro Importanza nella Eziologia e Profilassi del Colera.** [The Inagglutinable Vibrios.]—*Policlinico.* Sez. med. 1913. Sept. Vol. 20. No. 9. pp. 385-409.

The history of cholera diagnosis from 1883 to the present day is discussed and the variability of the cultural and biological tests insisted upon. An account is given of attempts with different genuine strains to produce inagglutinable vibrios from them by growth in water. Puntoni was able in this way to get several positive results. He removed also, by growing in earth and water mixtures, the agglutinating power of several vibrios. Why the methods were not uniformly successful he has not ascertained.

He finds these degenerated vibrios produce, in the animal body, agglutinins, which do not react with undoubted strains. Towards the end of an epidemic the vibrio may become modified so that it does not present itself with the classical characters. The transformation of cholera vibrios into cholera-like vibrios must now be accepted, and consequently the cholera-like vibrios isolated from patients and the healthy must be looked upon as simply a saprophytic variety of the real cholera organism.

From the standpoint of prophylaxis the inagglutinable vibrios require to be considered seriously.

W. J. P.

POTTEVIN (H.) & VIOLLE (H.). **Transmission du Choléra aux Singes par la Voie Gastro-intestinale.**—*Bull. Soc. Path. Exot.* 1913. July. Vol. 6. No. 7. pp. 482-484.

Starting from the clinical fact that purgatives predispose to cholera the authors have used this method to infect monkeys (*Cynomolgus*).

They first administer sulphate of soda; after eight hours, when purgation has commenced, a dose of sodium bicarbonate is given, then after twenty minutes the cholera culture. Death follows in 12-48 hours. The controls with the same treatment minus the cholera culture remain quite well. In order to get positive results a toxogenic cholera strain must be employed.

W. J. P.

POTTEVIN (H.) & VIOLLE (H.). **Choléra experimental des Singes inférieurs.**—*Compt. Rend. Acad. Sciences.* 1913. Aug. 4. Vol. 157. No. 5. pp. 343-345.

The authors repeat in this paper the statement that they have produced experimental cholera in monkeys (cynomolgus and rhesus). The animals die in 12 to 48 hours. They find, however, that if cultures (killed by ether) of the cholera organism be used they get practically the same effect. By diminishing the dose death does not occur until two to four days after the administration of the organisms. They do not say, however, whether this is a genuine infection or simply an intoxication. A little of the intestinal contents of a monkey which had died from the administration of the culture was fatal to other monkeys. The disease produced is similar in all essential points to human cholera.

An antitoxic and bacteriolytic serum prepared by means of the vibrio used prevents the death of the animals if given a few days before they receive the cultures. The first attack of the disease confers immunity against subsequent attacks.

W. J. P.

PANAYOTATOU (Angélique). **Survie du Vibrion Cholérique dans l'Eau du Nil.**—*Rev. d'Hyg. et de Police Sanitaire.* 1913. July. Vol. 35. No. 7. pp. 779-787.

In spite of carriers the essential agent in the spread of cholera is infected water. Panayotatou surveys the literature up to the present dealing with the bactericidal effect of different waters and shows how strikingly divergent the results obtained have been; HAFFKINE finding the Indian waters destroy the vibrios in a few hours and other workers discovering them alive after as many as 392 days.

The author believes water which is not contaminated by the specific vibrio may yet play a part in the causation of cholera, in so far as it may contain other organisms which favour the growth and exalt the virulence of the vibrios occurring in healthy carriers. She favours the study of the effect of local waters on the cholera germ under diverse conditions.

The Nile water at laboratory temperature destroys added comma bacilli in from 24 hours to 13 days. The bactericidal effect varies with the season and the precise place where the water is drawn.

The sterilization of the water destroys its bactericidal effect. The cause of the bactericidal effect is partly due to toxins secreted by the bacteria but chiefly to the actual symbiosis with certain microorganisms. Panayotatou isolated nineteen varieties of bacteria from Nile water, and was able to show that four of these were highly antagonistic to the comma bacillus while many were indifferent.

W. J. P.

Protective Inoculation.

Haffkine (W. M.). **Protective Inoculation against Cholera.**—98 pp. 4to. Illustrated. 1913. Calcutta: Thacker, Spink & Co. London: W. Thacker & Co. [Rs. 3, or 4*s*. 6*d*. net.]

This monograph should be read by all engaged in cholera vaccination in particular and vaccine work in general. It starts with an account of the variability of the *V. cholerae* and the bearing this has on cholera vaccination. The inter-relationship of virulence and immunizing power is discussed and the outstanding data in the literature of this subject are reviewed. The history of cholera vaccination in Spain and the reasons of the doubtful character of the results of the same are discussed, though it must be admitted not quite convincingly. The methods used to raise the virulence of the *V. cholerae* are described and, in considerable detail, as well as Haffkine's own method together with certain general principles to be followed in endeavouring to attain this end. The essential object of the research is then revealed. It was to ascertain whether by the use of Haffkine's vaccines an undoubted protection to cholera could be produced. The vaccines are living vaccines, and No. II. is of high and constant virulence. A complete account of the immunization carried out by Haffkine of certain sample populations in India against control populations is then given, and it appears to the reviewer that we have here a model of how such work should be arranged and performed.

The control populations lived in the same houses, barracks, gaols, ships, etc., as the inoculated, and were as far as possible similar. The results of the inoculations in Calcutta were as follows:—Three entirely different post-inoculation periods had to be recognised:

(1) The first four days after vaccination, during which the mortality as between the inoculated and the controls is but slightly different.

(2) The 5th to the 416th day after inoculation where the mortality of the uninoculated was 11·32 per cent. of the exposed, against ·72 per cent. of the inoculated and equally exposed.

(3) From the 417th day onward the inoculated were found to be in a post-immune period during which they possessed no protection against death. A very striking result of the experiment was to show that the immunization protected against the incidence of the disease but did not definitely diminish the case mortality. The number involved in the above and similar experiments in

different parts of India, and the care taken to check all the data, give us great confidence in the results of the work.

The monograph concludes with a discussion of the question of using vaccine II. in a devitalized condition.

W. J. P.

LEOPOLD (L.). **Het Choleravaccin te Stagen.** [Cholera Vaccination in Stagen.]—*Geneeskundig Tijdschr. v. Nederl.-Indië.* 1913. Vol. 53. No. 3. pp. 475-478.

The first part of this short note is taken up with criticism of previous work on the question. The results of 1,297 vaccinations are given. Fifteen of the vaccinated took the disease *i.e.* 1·16 per cent., whereas only 1·12 per cent. of the 1,071 controls took it. The case mortality of the vaccinated patients was however only 33⅓ per cent. against 50 per cent. in the unvaccinated.

W. J. P.

DYSENTERY.

Amoebiasis and Amoebic Dysentery.

Craig (Charles F.). **The Relation of Parasitic Amoebae to Disease.** —*War Dept. Office of the Surgeon-General. Bulletin No.* 2. 1913. Jan. pp. 95-113.

In this paper the author gives an excellent and up to date account of the parasitic amoebae. He commences with mention of the earlier works which led to the adoption of the classification of the amoebae now in use, he then discusses at length the relation of the entamoebae to disease, giving in detail many experiments carried out by himself and other investigators on animals.

The paper is concluded by a discussion on the relation of cultural amoebae to disease.

The author's conclusions are as follows:—

1. *Entamoeba coli* is a harmless commensal in the human intestine.

2. *Entamoeba histolytica* and *Entamoeba tetragena* are pathogenic species capable of producing in men the disease known as amoebic dysentery. *E. tetragena* is now believed to be identical with *E. histolytica.*

3. *Entamoeba coli, Entamoeba histolytica* and *Entamoeba tetragena* are strictly parasitic species and have not been cultivated.

4. There is not sufficient evidence at present to prove that any of the amoebae that have been cultivated are pathogenic to man. All cultivated species belong to the genus Amoebae and differ greatly in morphology and life cycle from the parasitic amoebae, which belong to the genus Entamoebae.

An excellent list of references is given.

S. R. Douglas

Craig (Charles F.). **The Identity of** *Entameba histolytica* **and** *Entameba tetragena,* **with Observations on the Morphology and Life-Cycle of** *Entameba histolytica.* — *Jl. of Infectious Diseases.* 1913. July. Vol. 13. No. 1. pp. 30-52. With 2 plates.

The first part of the paper is occupied with a series of extracts from various authors to show their opinions on the plurality of species of pathogenic entamoebae. Craig then summarises his results of over 1,000 cases of amoebic dysentery, classifying the types of amoeba and virulence of cases into five groups. From these he concludes that:—

1. Entamoebae with the histolytica type of nucleus are most common in cases with severe symptoms and are characteristic of entamoebae undergoing rapid, simple division. They are not degenerative.

2. Entamoebae with typical tetragena nuclei are most frequent in cases with slight symptoms and are characteristic of *E. histolytica* when undergoing simple division preparatory to forming the small generation that produces cysts.

3. Entamoebae reduced in size and with generally the tetragena type of nucleus occur in chronic cases. They are apparently characteristic of *E. histolytica* preparatory to cyst formation.

4. Cysts with four nuclei occur most frequently in cases that have apparently recovered.

5. Entamoebae showing appearances interpreted as budding or spore formation occur most frequently in cases with subacute symptoms. They are believed to be degenerative in nature.

The life cycle of *Entamoeba histolytica* is then considered in some detail. It is divided into three main stages, each of which is discussed. They are:—"A vegetative stage of development in which multiplication occurs rapidly by simple division: a pre-cystic stage in which multiplication occurs by simple division and the entamoebae become markedly reduced in size; and a cystic stage during which cysts containing four nuclei are developed."

The author concludes by discussing nomenclature, stating that the identity of *E. histolytica* and *E. tetragena* having been established, the latter name no longer has specific rank.

A. Porter.

MATHIS (C.). **Recherche des Kystes d'Amibes dans les Selles de l'Homme.**—*Bull. Soc. Méd.-Chirurg. de l'Indochine.* 1913. July. Vol. 4. No. 7. pp. 334-350. With 4 plates.

The present paper aims at giving indications that may be of service in dysenteric cases at periods when encystment of the amoebae has occurred.

1. *Examination of fresh stools.* Cysts of dysenteric amoebae are distinguished from *Entamoeba coli* from the colon, by their size, the former cysts being 12·5μ to 14·5μ in diameter, the latter 16μ to 19·5μ. Four nuclei are present in the mature dysenteric cyst, 8 in that of *E. coli.*

2. *Examination of fixed and stained preparations.* Double infections are common. Cysts with four nuclei may be mature *E. histolytica,* or immature *E. coli.* Distinguish between them by size. Dysenteric cysts also often contain chromidial blocks.

3. *Elimination of cysts in faeces.* Cysts appear at the decline of a dysenteric attack, especially when the faeces regain their normal consistency. Cysts can persist for years in old dysenteric cases.

4. *Differential diagnosis of Entamoebic cysts from those of other Protozoa and Blastocystis hominis.*

(*a*) Cysts of *Amoeba limax* type. These are rare. They have a double contour, the outer polygonal, the inner rounded.

(*b*) Cysts of *Lamblia intestinalis* are ovoid, 10μ to 15μ by 8μ to 9μ. One or more clearly curved lines occur along the long diameter of cyst. Giemsa-stained smears are useful for diagnosis, as they stain blue with 3 or 4 violet-red nuclear masses at the anterior summit.

(*c*) Cysts of *Prowazekia weinbergi* are common. Cysts are 5μ-7μ diameter, and round. Their envelope is very thin. They are extremely refringent.

(*d*) *Blastocystis hominis.* The fungus shows as spherical bodies chiefly, 10μ to 15μ diameter. They consist of a central, absolutely homogeneous, rounded mass, within a clearer, less refringent layer in which a variable number of nuclei are present. Mathis's observations are restricted entirely to cases observed in Indochina. He

points out the importance of the search for cysts for prophylactic measures, in retrospective diagnosis of dysentery, and in judging the value of various medicaments used. The plates illustrate *E. coli*, *E. histolytica*, and *Lamblia intestinalis*.

A. P.

DARLING (S. T.). **The Rectal Inoculation of Kittens as an Aid in determining the Identity of Pathogenic Entamoebae.**—*Southern Med. Jl.* 1913. Aug. Vol. 6. No. 8. pp. 509-511.

Darling's present paper covers much the same ground as those previously reviewed in this *Bulletin* (Vol. 1, pp. 180, 462, 720, and Vol. 2, p. 165). The rectal inoculation of fresh dysenteric material into kittens does not produce degenerative changes in the entamoebae. The author describes fully the morphology of the dysenteric trophozoite which "represents something analogous to adolescence," the precyst trophozoite, corresponding to *E. minuta* of ELMASSIAN, and the cyst representing either maturity or senility. An adolescent strain can be carried through as many as six transfers; a senile form cannot be maintained for more than one or two. All intermediate types from typical "histolytica" to typical "tetragena" forms can be obtained by successive passages through kittens. Pathological specimens of amoebae show budding, extrusion of chromidia and differences in staining properties The writer believes that cases thought to be "histolytica" dysentery will resolve themselves into infections by *E. tetragena*.

A. P.

JAMES (W. M.). **The Clinical Identification of Entamoebae.**—*Proc. Canal Zone Med. Assoc.* 1912. Vol. 4. Pt. 2. [12 pp.]

James indicates his plan for determining, for diagnostic purposes only, the identification of *Entamoeba coli*, *E. histolytica* and *E. tetragena* in fresh preparations in Panama. He relies chiefly on the character of the nucleus, ectoplasm, endoplasm and rate of movement in diagnosis.

Nucleus.	*E. coli.*—Distinct, with bright granules, always circular.
	E. histolytica.—Not so prominent, irregular ring or ellipse.
	E. tetragena.—Centriole present.
Endoplasm.	*E. coli.*—Well marked, always grey.
	E. histolytica and *E. tetragena.*—Greenish if stools contain erythrocytes, grey otherwise.
Ectoplasm.	*E. coli.*—Lobose pseudopodia, ectoplasm only distinct for a short time.
	E. histolytica and *E. tetragena.*—Long rapid, finger-like pseudopodia, ectoplasm distinct relatively long time.
Movement.	*E. coli.*—Crosses field of microscope relatively slowly compared with *E. histolytica* and *E. tetragena*.

The differences in the cysts are mentioned only. Cysts of *E. coli* are said to be 12μ to 18μ diameter, those of *E. tetragena* 10μ to 14μ. Neither spores nor buds of *E. histolytica* were seen by the writer in cases in Panama.

[Apparently Dr. James does not believe in the identity of *E. histolytica* and *E. tetragena* from his diagnostic characters.]

A. P.

GIFFIN (H. Z.). **Clinical Notes on Patients from the Middle North-west infected with Entamebas.**—*Jl. Amer. Med. Assoc.* 1913. Aug. 30. Vol. 61. No. 9. pp. 675-677.

During the last two and a half years the author has examined the stools of 1,700 patients and has discovered entamoeba in 227 cases. Of these 148 were *E. coli* and 79 either *E. tetragena* or *E. histolytica.*

Of the 79 cases harbouring *E. tetragena* or *E. histolytica* 41 were patients residing in the middle north-west states.

The symptoms complained of by these patients were usually not very severe, such as attacks of diarrhoea often with the passage of blood, abdominal pain, indefinite gastric symptoms, etc.

Only one case of liver was observed.

Of the 148 cases in which *E. coli* was found, 106 were in patients residing in middle north-west, and about one half of these complained of diarrhoea; the author believes, if further examinations had been made, *E. tetragena* or *E. histolytica* would have been discovered in such cases.

Treatment employed was usually ipecacuanha, and the author evidently has a belief that enemata of kerosene oil are efficacious.

S. R. D.

BAERMANN (G.) & HEINEMANN (H.). **Die Behandlung der Amöben-Dysenterie mit Emetin.** [The Treatment of Amoebic Dysentery by Emetine.]—*München Med. Wochenschr.* 1913. May 27. Vol. 60. No. 21. pp. 1132-1135; and No. 22. June 3. pp. 1210-1213.

The authors give a summary of the researches of WHERRY, VEDDER and ROGERS, and then go on to describe their own clinical experiences with the method. The supply of emetine available being but small, only 22 cases could be so treated, of whom seven died from intercurrent complications during observation. The post mortem examinations in these cases enabled the authors to note the remarkable improvement in the local lesions brought about by the drug. The dose of hydrochloride* of emetine for hypodermic injection seems to lie between 150 and 200 milligrammes, but for intravenous injection it may vary from 60 to 200

* The terms hydrochlorate and hydrochloride of emetine are synonymous. Salts formed by the combination of an alkaloid with hydrochloric acid were in this country formerly called hydrochlorates, but of late years they have been commonly known as hydrochlorides In France however the term hydrochlorate is still in use for such salts.—S. R. D.

milligrammes, according to the indications. Larger doses are apt to induce unpleasant collapse, so that 250 milligrammes should be considered the maximum dose for a body-weight of 60 kilos.

Though the general results were most favourable as regards the healing of ulcers and the amelioration of the clinical symptoms, the authors could not help noticing a tendency to relapse in a certain number of cases, indicated by the re-appearance of amoeba in the stools after an interval of ten days or so. This should necessitate the repetition of the treatment and therefore patients should not be discharged from hospital too promptly, but in spite of this drawback, the treatment seems to surpass in effectiveness all means hitherto tried for the relief of amoebic dysentery.

S. R. D.

Roux (G.) & Tribonbeau (L.). **Action de l'Émétine dans Quelques Formes spéciales d'Amibisme et, par Analogie avec une d'elles, dans la Syphilis.**—*Bull. Soc. Path. Exot.* 1913. June. Vol. 6. No. 6. pp. 424-427.

The account of four cases. The first was one of dysentery in which the stools were found to contain amoebae and also large numbers of spirilla, treatment with emetine caused the disappearance of both the spirilla and amoebae.

The second case was one of dysentery in which amoebae and *Trichomona vaginalis* were said to be demonstrated in the stools, treatment with emetine caused the disappearance of the amoeba but had no effect on the Trichomona and the diarrhoea continued.

The third case was one of multiple abscesses of the liver which rapidly improved under the emetine treatment.

The fourth case is one of primary syphilis in which the authors having noted the disappearance of spirilla from the stools during treatment with emetine, determined to try the effect of this drug on the *Spirochaeta pallida*. The result was negative.

S. R. D.

Gaide (L.) & Mouzels (P.). **Note sur le Traitement de la Dysenterie Amibienne par l'Emétine.**—*Bull. Soc. Path. Exot.* 1913. July. Vol. 6. No. 7. pp. 491-494.

The report of four cases of amoebic dysentery in which, although the symptoms and general condition of the patient improved rapidly under treatment with emetine, cysts and in one case active amoebae could always be demonstrated in the stools.

S. R. D.

Job (E.) & Lévy (L.). **Un Cas de Dysenterie Amibienne chronique traitée par l'Emétine.**—*Bulls. et Méms. Soc. Méd. des Hôpit. de Paris.* 1913. May 15. (3 sér.) Vol. 29. No. 16. pp. 988-993.

A report of a case of severe chronic amoebic dysentery treated with subcutaneous injections of emetine hydrochloride. Rapid recovery.

S. R. D.

Destéfano (José). **Dos Casos de Disenteria tratados con el Método de Rogers.** [Two Cases of Dysentery treated by the Method of Rogers.]—*Semana Medica.* 1913. May 22. Vol. 20. No. 21. pp. 1189-1192.

An account of the treatment at Buenos Aires of two cases of amoebic dysentery, one acute and the other chronic, by injections of emetine. 0·04 gm. of the hydrochloride was given night and morning, with excellent results in each case.

S. R. D.

Maxwell (J. Preston). **The Use of Emetine Salts in the Treatment of Amoebic Dysentery.** — *China Med. Jl.* 1913. March. Vol. 27. No. 2. pp. 116-119.

The report of ten cases of amoebic dysentery treated by the subcutaneous injections of emetine hydrochloride. The doses given were one to five centigrams daily and the result in each was very satisfactory.

S. R. D.

Hutcheson (Allen C.). **Results in Thirteen Cases of Dysentery treated with Emetine.**—*China Med. Jl.* 1913. July. Vol. 27. No. 4. pp. 243-245.

The cases reported were mostly uncomplicated amoebic dysentery, all of which rapidly improved; besides these, two were infected with amoeba and *Schistosoma japonicum*, one of which improved markedly under the treatment. Three other cases infected with Schistosoma only were treated, two of which showed marked improvement of symptoms.

S. R. D.

La Cava (F.). **La Chemioterapia della Dissenteria da Amebe. Due Casi Curati col Cloridrato di Emetina secondo il Metodo di L. Rogers.** [The Drug Treatment of Amoebic Dysentery. Two Cases cured with Emetine Hydrochloride after Rogers' Method.]—*Malaria e Malatt. d. Paesi Caldi.* 1913. Apr.-May. Vol. 4. No. 3. pp. 189-197.

Observations on the subject, and an account of two cases satisfactorily cured with doses ranging from one quarter to one decigramme.

S. R. D.

Low (George C.). **The Administration of Emetine by the Mouth in Amoebic Dysentery.** [Memoranda.]—*Brit. Med. Jl.* 1913. June 28. pp. 1369-1370.

The account of a case of chronic amoebic dysentery treated with keratin-coated tabloids of emetine hydrochloride, each of which contained half a grain of the emetine salt. The dose administered was one tabloid every evening.

The improvement was very rapid and no nausea or other unpleasant symptoms were noticed.

S. R. D.

THOMPSON (J. H. C.). **The Treatment of Dysentery by Injections of Emetine Hydrochloride.** — *Dublin Jl. of Med. Sciences.* 1913. Aug. 3. No. 500. pp. 102-109.

A thesis in which the author gives an account of the work which led to the use of emetine as a cure of amoebic dysentery, and the details of seven cases successfully treated by the subcutaneous injections of this drug.

S. R. D.

LYON (Gaston). **Traitement par l'Émétine de la Dysentérie amibienne.**—*Revista Med. de S. Paulo.* 1912. Oct. 31. Vol. 15. No. 20. pp. 406-408.

The author gives a resumé of some of the literature on the treatment of dysentery by the subcutaneous injection of emetine salts. No original observations are quoted.

S. R. D.

CHAUFFARD (A.). **Les Mauvais Effets de l'Émétine en Lavement dans la Dysenterie Amibienne.**—*Bulls. et Méms. Soc. Méd. des Hôpit. de Paris.* 1913. July 3. (3 ser.) Vol. 29. No. 23. pp. 1235-1237.

The report of a case of chronic dysentery which rapidly improved under treatment with subcutaneous injections of emetine hydrochloride, but the stools remained semi-solid and to remedy this condition an enema composed of ten centigrams of emetine hydrochloride dissolved in a litre of water was administered. This was immediately followed by a return of the dysenteric symptoms, fourteen motions containing blood and mucous being passed in the next 24 hours, the recrudescence was however of very short duration and the patient rapidly recovered.

S. R. D.

MAURIN (M.). **Dysenterie Amibienne Traitée et Guérie par la Décoction d'Ipéca en Lavements.**—*Bulls. et Méms. Soc. Méd. des Hôpit. de Paris.* 1913. July 31. (3 sér.) Vol. 29. No. 27. pp. 282-285.

The author reports a case of dysentery which rapidly recovered when treated with enemata of a decoction made of four grams of ipecacuanha in 200 cc. of water, and in addition, six grams of bismuth were administered daily by the mouth.

S. R. D.

WADHAMS (S. H.) & HILL (E. C.). **Three Cases of Amoebic Dysentery treated with Salvarsan.**—*Jl. Amer. Med. Assoc.* 1913. Aug. 9. Vol. 61. No. 6. pp. 385-386.

The authors give details of three cases in which all the symptoms of dysentery and the amoebae in the stools disappeared after administration of neo-salvarsan. In two cases the drug was given intravenously and in one intramuscularly.

S. R. D.

Denier & Huet. **La Dysentérie à Saïgon.**—*Bull. Soc. Path. Exot.* 1913. June. Vol. 6. No. 6. pp. 413-415.

The authors report the results of their examination of the stools in 23 cases of dysentery occurring in Saigon between May and October 1912.

In seven cases dysentery bacilli were isolated, three belonging to the Shiga type, two to the Flexner type and from two cases, both young children, bacilli resembling the type Y and type Saigon were obtained.

In ten of the remaining sixteen cases amoebae were demonstrated.

S. R. D.

Whitmore (E. R.). **Dysentery in the Tropics.**—*New York Med. Jl.* 1913. Aug. 9. Vol. 98. No. 6. (Whole No. 1810.) pp. 257-260. With 3 figs.

A general paper on dysentery both bacillary and amoebic which contains no new information.

S. R. D.

Lukis (Charles Pardey). **An Address on the Diagnosis and Treatment of Dysentery.** (Delivered before the South Midland Branch of the British Medical Association.)—*Brit. Med. Jl.* 1913. June 28. pp. 1357-1359.

The author gives in his address an excellent account of both amoebic and bacillary dysentery. The points discussed included the differential diagnosis between bacillary and amoebic dysentery, the diagnosis of liver abscess and the treatment of the manifestations of both types of the disease.

S. R. D.

Liver Abscess.

Pervès & Oudard. **Une Série de Vingt Cas Personnels d'Abcès du Foie des Pays Chauds.**—*Arch. de Méd. et Pharm. Navales.* 1913. Apr. Vol. 99. No. 4. pp. 241-270; and May. No. 5. pp. 321-353.

In this paper the authors give the complete clinical descriptions of twenty cases of liver abscess, discussing also the operations performed for the evacuation of the pus, any complications that occurred, morbid anatomy, etc. Amongst other conclusions the authors believe that—

1. Liver abscess occurs frequently in individuals returning from the tropics, and when the following symptoms are present a liver abscess should be suspected:—
   (*a*) Enlargement of the liver with a sense of weight in the liver region.
   (*b*) A point in that region which is distinctly painful to pressure.
   (*c*) The previous history of dysentery.
2. The cases seen in France are generally of the chronic type.

3. The absence of polymorphonuclear leucocytosis does not contra-indicate the presence of an abscess.

4. The presence of glycogen in pus free from blood indicates that the abscess is situated in connection with the liver.

5. Exploration by aspiration is a sound method and gives satisfactory results.

6. Ether should be used as an anaesthetic in preference to chloroform in such cases.

7. A frequent pulse-rate (100-120) after the operation is not necessarily a bad sign.

8. The escape of bile occurring from the drainage tube is not as a rule a serious complication.

S. R. D.

CARDARELLI (A.). **Come si Diagnostica l'Ascesso Epatico.** [The Diagnosis of Hepatic Abscess.]—*Riforma Medica.* 1913. June 21. Vol. 29. No. 25. pp. 791-796.

A clinical lecture upon a single case, without any particular novelty.

S. R. D.

CHAUFFARD (A.). **Abcès Dysentérique du Foie, avec Vomiques successives. Traitement par la Ponction évacuatrice et l'Emétine.**—*Bulls. et Méms. Soc. Méd. des Hôpit. de Paris.* 1913. May 22. (3 sér.) Vol. 29. No. 17. pp. 1017-1024.

The report of a case of liver abscess which had burst into the lung about 12 months before being admitted into hospital under the author's care. The treatment employed was aspiration and administration of emetine hydrochloride subcutaneously; the patient improved rapidly, this improvement the author believes to be due more to the aspiration than to the emetine as no amoebae were discovered in the pus.

S. R. D.

VALENCE (M.). **Abcès du Foie traité selon la Méthode de Rogers. Cures d'Emétine contre l'Amibiase.**—*Bulls. et Méms. Soc. Méd. des Hôpit. de Paris.* 1913. July 31. Vol. 29. (3 sér.) No. 27. pp. 276-282.

The report of a case of chronic liver abscess treated by aspiration of the pus, injection into the abscess cavity of a solution of emetine hydrochloride together with the subcutaneous injection of emetine. The patient rapidly improved.

S. R. D.

COUTEAUD. **La Chirurgie l'Émétine et l'Epeca dans le Traitement des Abcès du Foie.**—*Bull. et Mém. Soc. de Chirurg. de Paris.* 1913. June 17. Vol. 39. No. 22. pp. 941-949.

This paper contains a complete account of two cases of liver abscess, one of which was treated by aspiration and the subcutaneous injection of emetine, the other by incision and drainage together with the lavage of the abscess cavity with a decoction of ipecacuanha. Both cases recovered.

S. R. D.

MALLANNAH (S.). **Emetine and Liver Abscess.** [Correspondence.] —*Indian Med. Gaz.* 1913. Aug. Vol. 48. No. 8. pp. 331-332.

A report of a case which has already been noted in this *Bulletin*, Vol. 2, p. 170, as it was published in full in the *British Medical Journal*, 1913, June 7, pp. 1206-1207.

S. R. D.

GLUZET & BAUR (J.). **Hydropneumocyste hépatique au Cours d'un grand Abcès du Foie, consécutif à une Dysenterie, examens Radioscopiques et Radiographiques.** — *Lyon Médical.* 1913. July 13. (45 année.) pp. 50-55. With 2 plates.

An account of a case of liver abscess, in which, after aspiration, the cavity of the abscess was found by examination with x rays to be filled with gas.

The authors discuss the origin of the gas and believe it to have been allowed to enter through the aspiring trocar during the introduction of a solution of emetine into the cavity.

S. R. D.

SAMBUC (E.). **Les Abcès du Foie à l'Hôpital de Haiphong.**—*Arch. Générales de Chirurgie.* 1913. June 25. Vol. 7. No. 6. pp. 641-659.

This paper has already been noticed in this *Bulletin*, Vol. 2, pp. 167-169, as it has already appeared in the *Annales d'Hygiène et de Médecine Coloniales.*

S. R. D.

BACILLARY DYSENTERY.

EBELING (E.). **Beobachtungen über die Y-Ruhr, gelegentlich einer Epidemie.** [Observations on Y-Dysentery, with an account of an Epidemic.]—*Zeitschr. f. Hyg. u. Infektionskr.* 1913. June. Vol. 74. No. 3. pp. 447-472. With 1 plate.

An account of an extensive epidemic of dysentery due to the Y-bacillus, which attacked the cavalry of the 10th German Army Corps during the summer manoeuvres of 1911, in Hanover. Altogether 119 men presented unmistakeable symptoms of the disorder while 390 more could be classed as suspects. The mortality was nil. The source of the infection could not be definitely traced, but the manoeuvre ground had been occupied throughout the summer by successive bodies of cavalry; and it is suggested that flies breeding in manure heaps which had been allowed to accumulate in the lines during the hot weather, formed the means of transmission. The pressing calls of nature, amongst men on guard affected with the disease, cause such manure-heaps to be used as latrines, inevitably, especially at night. This is a point always worthy of consideration, when investigating the causes of such epidemics. The organism isolated from the stools of patients was in every case the Y- or Hiss-Russell bacillus. A full account is given of its cultural and other characteristics, for which reference should be made to the original paper. A very

extensive examination of the stools of all contacts was carried out, with the result of discovering no less than 147 carriers of the disease among healthy men. The paper concludes with a number of recommendations with regard to camp-hygiene, of the ordinary type. Special care should be taken to clear away manure-heaps at shorter periods than ten days, this being the time occupied by the development of the ordinary fly from the egg.

S. R. D.

LORENTZ (F. H.). **Zur Dysenterie der Irrenanstalten.** [On Asylum Dysentery.]—*Centralbl. f. Bakt.* 1. Abt., Orig. 1913. May 23. Vol. 69. No. 3. pp. 113-132.

The author gives an account of an outbreak of dysentery in the asylum at Düren, which was only brought to an end by a systematic search for chronic dysentery-carriers among the patients. Four such were discovered, and by their isolation and the surveillance of all contacts the outbreak was finally suppressed. The author insists upon the necessity for equipping all large asylums with proper laboratories under the charge of an expert, in which the diagnosis of such diseases by modern methods can be carried out without delay. It should be a rule to pass all new patients through a quarantine block before distributing them throughout the asylum, and there should also be isolation-blocks wherein convalescents can be kept until it can be ascertained that they are not carriers. The uncleanly habits of the insane greatly facilitate the propagation of such diseases as dysentery in asylums, a fact of which the authorities in Germany do not seem sufficiently mindful; the type of dysentery seen in asylums often takes on a larval form so that it escapes recognition until too late. The mortality is always fairly high in spite of this fact, as the disease seems to have a preference for old and debilitated patients. It is a good thing to investigate all cases of febrile diarrhoea occurring in asylums upon the assumption that they are true dysentery, and serum-tests will generally give reliable indications for this purpose, though they are not absolutely conclusive as to the particular strain of the bacillus, according to the author's findings.

S. R. D.

BUTLER (C. S.). **Some Carbohydrate Reactions of the Dysentery Bacillus.**—*Philippine Jl. of Science.* Section B., Trop. Med. 1913. Apr. Vol. 8. No. 2. pp. 123-131.

The author insists on the importance of using media containing pure carbohydrates for the differentiation of the various types of dysentery bacilli, and lays special stress on procuring pure samples of maltose, as he believes that the use of impure samples of this sugar has led frequently to erroneous conclusions.

The media which the author has found most satisfactory, are very simple and are prepared as follows:—Witte's peptone 1 per cent., the carbohydrates (purest obtainable) 1 per cent., sodium chloride (chemically pure) 0·5 per cent. dissolved in distilled water. The media are then distributed in test tubes, 10 cc. in each, and sterilized at 20 pounds pressure for 20 minutes.

Then to each tube 2 cc. of a 5 per cent. litmus solution which has been separately autoclaved is added, and the tubes are resterilized in a steam sterilizer for fifteen minutes. Using such media the author obtained very consistent results, and appears to agree with the classification of the dysentery bacilli given by LEHMANN and NEUMANN. The following table shows the carbohydrate reactions.

Carbohydrate.	Shiga-Kruse.	Flexner.	Strong.	Bacillus Y.
Mannite ...	Blue ...	Red	Red	Red
Maltose ...	Blue ...	Red	Blue ...	Blue.
Saccharose ...	Blue ...	Blue ...	Red	Blue.

S. R. D.

BAUGHER (Albert Howard) & GAY (Robert S.). **An Epidemic of Bacillary Dysentery in Institutional Children.**—*Trans. Chicago Pathological Soc.* 1913. Feb. 1. Vol. 9. No. 1. pp. 8-10.

An account of an outbreak of dysentery occurring in the Chicago Orphan Asylum; during the epidemic 37 children, 3 caretakers and 1 laundress were attacked.

The disease was seemingly imported into the institution by a child who had had an attack of dysentery six weeks before admission.

The bacteriological investigations carried out by the authors appear to have been very incomplete and the conclusions arrived at unwarranted seeing that they state that the organism isolated from the infected stools "probably falls in the Flexner group" after having found that it produced acid and gas in media containing the following carbohydrates:—saccharose, dextrose, maltose, lactose, and mannite.

S. R. D.

BALANTIDIC DYSENTERY.

VON PROWAZEK (S.). **Zur Kenntnis der Balantidiosis. Zusammenfassende Darstellung.** [Summary of Literature of Balantidiosis.]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1913. Aug. Beiheft 6. pp. 5-24. [pp. 371-390.] With 2 coloured plates and 9 text-figs.

The author gives a review of the work done on *Balantidium coli*, both in men and pigs, showing the balantidium to be definitely the cause of balantidium-infusorian-dysentery or balantidium-colitis. The parasite has been found in many parts of Europe and Asia, also in Africa and America. The size, as shown by accounts of various authors, lies between 60μ to 200μ long and 50μ to 70μ broad. The structure of the organism is discussed in detail, the various accounts extant being compared and amplified. The mouth is not terminal. The arrangement of the fibrillae is discussed, and the structure of the macronucleus in surface and section.

Balantidia from human faeces live about 30 hours as free organisms. According to GLAESSNER, balantidium possesses no proteolytic but a definite diastatic ferment. The parasite produces haemolysis.

Multiplication is by division, one individual forming a new peristome, the other retaining that of the parent. In the submucosa of patients, nests of balantidium and free spores have been found. The attempts at cultivation are set forth in detail.

Clinically, *Balantidium coli* causes much alteration in the blood. The pathological anatomy is reviewed, the mucosa and submucosa of the large intestine being chiefly infected. Accounts of therapeutic treatment by various workers are given.

Balantidium coli in pigs is very common. Swineherds and pig slaughterers appear most often as patients for balantidium dysentery. Cysts of various sizes appear frequently in pig faeces. Only one successful culture, that in physiological salt solution, has been made, other media have given negative results.

[To those interested, this paper gives a full review of the very scattered literature relating to balantidium, and should be consulted in the original.]

A. P.

SPRUE.

WEGELE (C.). **Ueber die diätetische Behandlung gewisser Formen chronischer Diarrhöen speziell von "Indian Sprue."** [The Dietetic Treatment of Certain Forms of Chronic Diarrhoea, and especially of Indian Sprue.]—*Mediz. Klinik.* 1913. June. Vol. 9. No. 22. pp. 866-868.

A recommendation of the diet proposed by VAN DEN SCHEER (*Tijdschrift voor Geneeskunde*, 1905, No. 10) for sprue, consisting of fresh strawberries, with or without milk and other things. The author had the opportunity of treating in this way two cases of sprue returned from the tropics, one from Celebes and the other from Jamaica. To both fresh strawberries were given, first only the juice passed through a sieve, and mixed with lukewarm milk in the proportion of one part of juice to two of milk, and afterwards the fruit itself up to three pounds daily. From two to four eggs per diem were also allowed, with sponge-cake and bread and milk, as the condition of the alimentary canal improved. A good result with subsidence of all symptoms was obtained in both cases, which seemed to be permanent from subsequent communications received from the patients. The fresh fruit alone produced the desired effect.

S. R. D.

ASHFORD (Bailey K.). **Notes on Sprue in Porto Rico and the Results of Treatment by Yellowed Santonin.**—*Amer. Jl. Trop. Diseases & Preventive Med.* 1913. Aug. Vol. 1. No. 2. pp. 146-158.

The author in this paper gives an excellent account of sprue occurring in Porto Rico. In discussing the diagnosis of this

disease he insists on the presence of the following symptoms and signs:—

1. The typical sprue tongue.
2. The small liver.
3. The characteristic stool.
4. The long continued and excessive production of gas in the intestine.

These signs and symptoms are then discussed in detail. He then analyses 86 cases.

Firstly as regards race—

Americans	19
Porto Ricans	56
Spaniards	8
Natives of other Antillian Islands ...	2
German	1

Secondly as to age—

Under 20 (2 being 4 years old)	9
20-40	53
40-60	18
60-80	6

Thirdly as to circumstances—

11 were poor.

72 enjoyed the comforts of life to a greater or less extent.

Fourthly as to severity of symptoms—

Light cases	4
Moderate cases	30
Marked cases	39
Severe cases	10

Seventy-six cases were treated by the author, the treatment employed being:—

Milk "cure"	62
Meat ,, ...	3
Fruit ,, ...	1
General diet	2
On various diets + santonin	8

The results obtained were:—

Apparently cured	24
Improved	11
Unimproved	19
Result unknown	23
Died	9

The author then gives a detailed account of eight cases treated with various diets and santonin, and then of eight cases treated with various diets without santonin; the conclusions he draws from the study of these cases are that the santonin treatment does not seem to be superior to a carefully supervised diet, and that the most important factor in the dieting of these patients is to limit to very small amounts the starches, sugars and fats.

S. R. D.

UNDULANT FEVER.

Mohler (J. R.) & Eichorn (A.). **Malta Fever, with Special Reference to its Diagnosis and Control in Goats.**—*U.S. Dept. of Agriculture. 28th Ann. Rep. of Bureau of Animal Industry for the Year* 1911. pp. 119-136. With 4 plates. (1913. Washington: Govt. Printing Office.)

In this paper an interesting account of the history and etiological features of undulant fever is given; the authors point out that, contrary to the generally accepted view, the fever exists in the United States of America. After a careful investigation in the infected districts it appeared certain that under the names of "mountain fever" and "slow fever" the disease had existed for at least 25 years in Texas and New Mexico; that it always appeared among the people connected with goat raising, and that entire families have been taken sick with the fever on goat ranches. In some years the cases were numerous, in others few; they were most common after the kidding season, during the months of April, May, and June. Mexican goatherds are infequently affected owing to the fact that they always boil the milk before drinking it. The disease is said to have prevailed in the country long before any improved breeds of goats were imported from South Africa; most of the goats in the infected region are of the Angora breed. The most important symptom observed in the infected goats was the frequency of abortions, which occurred in from 50-90 per cent. of pregnant females. In most cases the animals show no sign of sickness. The complement fixation test was found to be useful as a means of diagnosis where the agglutination tests gave doubtful reactions, and some very practical advice is given with regard to the preventive measures to be employed. It is stated that there is a tendency at the present time (1912) among physicians to advise the drinking of goats' milk for children and invalids; therefore the eradication of the diseased goats is very important from a public health standpoint.

P. W. Bassett-Smith.

Tria (P.). **La Febbre Mediterranea. (Note di Epidemiologia, Diagnostica, Profilassi.)**—*Riforma Medica.* 1913. Apr. 5. Vol. 29. No. 14. pp. 380-383.

In this paper the author gives a short review of the epidemiology and the methods used for the diagnosis and prevention of undulant fever. Nothing new is brought forward, but the polymorphic character of the symptoms as found in the now widely extended endemic areas is specially emphasised, and the difficulty in differentiating some of the more irregular forms from paratyphoid and typhoid is noted. The complete and lasting immunity that can be produced artificially in animals is an important point; in dealing with goats in the affected regions an active immunisation is therefore possible. The reduction of the number of infected goats in Malta has been very great within recent years, but attention is drawn to the fact that in preparations made from

infected milk the *M. melitensis* can remain active for at least three weeks, and may therefore propagate the infection for that period.

P. W. B.-S.

MEREU (F.). **Febbre di Malta nella miniera Argentiera (Sassari).** [Undulant Fever in the Argentiera mine.]—*Policlinico.* Sez. prat. 1913. June 29. Vol. 20. No. 26. pp. 947-949.

MISSIROLI first described the presence of the disease in Sardinia. The author describes eight cases in which there was an irregular fever of long duration associated with enlargement of the spleen, sweats, articular pains and neuritis, which gave negative serum reaction with *B. typhosus* and positive with *M. melitensis.* He thinks that the diagnosis of these cases is very difficult and that many have been mistaken for malaria, typhoid and para-typhoid fevers. It is likely that the infection was derived from goats' milk as in the endemic area goats are present in great numbers and the unboiled milk was used by the sick.

P. W. B.-S.

TROTTA (Guido). **Ueber zwei Fälle von Eiterung bei Maltafieber, welche Senkungsabszesse im Gefolge von Malum Potti vortäuschten.** [Two Cases of Suppuration in Undulant Fever, which simulated the Burrowing Abscesses of Pott's Disease.] —*Wein. Klin. Wochenschr.* 1913. Aug. 28. Vol. 26. No. 35. pp. 1395-1398.

In a septicaemic disease like undulant fever septic infections may follow, and recent research has proved that abscesses are not uncommon as sequelae. As complications the following have been described: Suppurative arthritis (GILMOUR & KENNEDY), Subphrenic abscess (EYRE & FAWCETT), Cholangitis (BULL), Endocarditis (BASSETT-SMITH), Pyonephritis (SCHOTTMÜLLER), and Pyonephrosis (CANTANI). The difficulties of diagnosis are often very great, as relapses of pyrexia are so common in this disease, but when the pus has collected surgical treatment becomes necessary. The two cases described by the author were in men of 45 and 52 years of age; both had contracted the fever about the same time and in the same district. Several months after, they complained of pains in the back and, later, swellings appeared in the crural regions. The clinical symptoms were like those of psoas abscess, slight fever was present, but there were no pulmonary signs or tubercular evidences. The serum of both reacted up to 1/200 with *M. melitensis.* No organisms were found in the pus and no sign of diseased bone was detected at the operations. Recovery was complete in both cases. The differential diagnosis had to be made between *M. melitensis* infection, Pott's disease, syphilis, and actinomycosis. The author states that he was guided mostly by the clinical characters, history, and serum reactions.

P. W. B.-S.

GARDNER-MEDWIN (F. M.). **A Case of Undulant Fever.**—*Liverpool Med. Chir. Jl.* 1913. July. No. 64. pp. 386-394. With 1 chart.

A description is given of a case of fever occurring in a male aged 64, who, while travelling in the Mediterranean for his health, apparently contracted undulant fever early in 1911 at one of the coast ports, probably in the south of France. The onset was very gradual but at Port Said he had marked arthritis, sweats, jaundice, and felt definitely ill. On arriving at Colombo he was landed and there CASTELLANI isolated the *M. melitensis* from his blood. After many relapses he returned to England in May 1912. The fever, associated with jaundice, continued to relapse from time to time and in January 1913 his condition showed high pyrexia, slight haemorrhages from mouth and lips, purpuric spots on the skin, and jaundice; the liver and spleen were both large. The urine contained traces of bile, and CAMMIDGE from an analysis of the faeces diagnosed catarrhal jaundice, probably of bacterial origin. From the urine an organism was isolated, believed to be the *M. melitensis,* and the patient's serum gave positive agglutination reactions with this, and the laboratory culture of *M. melitensis,* in dilution of 1/10 to 1/2000. Vaccine treatment was now commenced, and though the injections at first increased both the fever and the jaundice, obvious improvement set in, and in March he was able to do his work, but still was under vaccine treatment.

[The presence of jaundice is very rare in undulant fever. It is possible in this case that some intercurrent affection was the cause of the ill-health previous to the Mediterranean trip; but the very prolonged course, irregular symptoms, and the source of the infection suggest that the case may have been one due to a para-melitensis infection.]

P. W. B.-S.

SUAREZ DE FIGUEROA (D. José). **Cooperacion al Estudio de la Fiebre de Malta.**—*El Siglo Médico.* 1913. May 3. Vol. 60. No. 3,099. pp. 279-280; and June 14. No. 3,105. pp. 371-373.

These papers form a continuation of those of the author summarised in Vol. 1 of this *Bulletin* (p. 581). A clinical account is given of five cases in which the diagnosis was made bacteriologically.

P. W. B.-S.

VIGANÒ (L.). **Die Thermopräzipitinreaktion des Maltafiebers.**—*Centralbl. f. Bakt.* 1. Abt., Orig. 1913. Aug. 4. Vol. 70. No. 3-4. pp. 200-202.

Le Termoprecipitine del Micrococco Melitense.—*Giorn. R. Soc. Ital. d'Igiene.* 1913. Aug. 31. Vol. 35. No. 8. pp. 337-340; and *Policlinico.* Sez. med. 1913. Sept. Vol. 20. No. 9. pp. 430-432.

The author has carried out a number of precipitin reactions for the diagnosis of undulant fever. He immunised a horse with

his strain of *M. melitensis* and during the process demonstrated from time to time that the serum possessed precipitating powers with a clear bacillary extract. He found that it was necessary to obtain a very clear extract; this had to be filtered through asbestos of a pure quality; if bad materials were used, pseudo-reactions were given. The bacillary extract was made from a 48 hour agar culture mixed with 25 c.c. of physiological salt solution and was treated either by heat in a water bath for 5 minutes, or by cold in the ice chest for 24 hours. The precipitating serum was obtained from infected animals which had been starved for 18 hours; and was made absolutely clear by centrifugation. When the test was carried out with the culture extract in a water bath or in the cold it gave at once, or quickly after, the opalescent ring reaction—at once with the first, more slowly and weakly with the second. Fifteen strains of *M. melitensis* were employed. With the heated extract clear sharp reactions were immediately obtained, the white ring becoming more and more strong during a quarter of an hour; though all were distinct, they were not all equally strong. Extracts made with staphylococci, streptococci, meningococci, gonococci, typhoid bacilli, &c., used as controls gave negative results. Extracts from the organs of guinea-pigs infected with *M. melitensis* were made in a similar way, reactions were given quickly and clearly with the extracts of spleen and liver, less strong with kidney extract, and not with heart extracts. To demonstrate the specific character of the reaction the following tests were made:—

1. Precipitating *M. melitensis* serum + extract of fresh material.
2. ,, ,, ,, + extract of an animal infected with *M. melitensis.*
3. ,, ,, ,, + extract of *melitensis* culture.
4. ,, ,, ,, + extract of normal organs.
5. ,, ,, ,, + physiological salt solution.
6. Normal serum + extract of fresh material.
7. ,, ,, + extract of animal infected with *M. melitensis.*
8. ,, ,, + *melitensis* culture.

The normal serum was necessarily obtained from the same species of animal as the precipitating *melitensis* serum. These experiments appear to be worth following up, and are reliable if the material is well selected, and the technique carefully carried out. The author believes that he has established the reaction on a satisfactory basis by experimental work, and that in infections naturally acquired the process should be most useful in establishing a diagnosis of undulant fever.

P. W. B.-S.

Erratum.

Bulletin, Vol. 1, p. 578, line 21 from bottom (end of first paragraph of Bassett-Smith's paper),—for "48 hours" read "two hours."

HELMINTHIASIS.

Schistosomiasis.

Bour (E. F.). **Notes sur la Bilharziose.**—*Bull. Soc. Méd. de l'Ile Maurice.* 1913. Vol. 31. 2nd Ser. No. 32. p. 22.

In continuation of a communication made in December 1911 the author now recounts his attempts to infect experimentally the monkey, (*Macacus cynomolgus*), rabbit, and dog. The mouth, the nasal mucosa and the penis were experimented upon in the case of the monkey. The penis was first swathed in hot moist compresses for 45 minutes then totally immersed for an hour in water swarming with miricidia. The experiments upon the rabbit were as follows:—(*a*) Water containing about 50 miricidia was injected intraperitoneally. (*b*) Miricidia were applied for one hour to the skin of the ear which had previously been shaved and softened by hot compresses; and to granulations of a scarified ear. (*c*) Intravenous injection of very lively miricidia in a solution of one per cent. glucose in water.

In dogs the same experiments were made upon the penis, intravenous injections were also made.

These animals were under observation for a long time, the urine and faeces being frequently examined. The results, including those of a macroscopical and microscopical examination of the organs at the autopsy, were always negative. To explain this the suggestion of Professor Looss is adopted, viz., that man is the only host in which the bilharzia worm develops. [It should be stated however that the bilharzia worm found by Cobbold in a monkey is a male *S. haematobium*].

R. T. Leiper.

Miyagawa (Y.). i. **Ueber den Wanderungsweg des** *Schistosomum japonicum* **von der Haut bis zum Pfortadersystem und über die Körperkonstitution der jüngsten Würmer zur Zeit der Hautinvasion.** [On the Route of *Schistosomum japonicum* from the Skin to the Portal System and on the Morphology of the young Worms at the Time of the Skin Invasion.]—*Centralbl. f. Bakt.* 1. Abt., Orig. 1912. Oct. 12. Vol. 66. No. 5/6. pp. 406-416.

ii. **Ueber den Wanderungsweg des** *Schistosomum japonicum* **durch Vermittlung des Lymphgefässystems des Wirtes.** [On the Migration of the *Schistosomum japonicum* through the Lymphatic System of its Host.]—*Ibid.* 1913. Mar. 1. Vol. 68. No. 2. pp. 204-206.

i. In this important memoir the cutaneous infection in bilharziosis hypothecated by Looss is proved by direct microscopical observation. The infective organism is elliptical, somewhat flattened, 0·04 mm. long and 0·015-0·022 mm. broad with various primitive organs. There is a thin body wall of double contour provided with short cilia and scarcely visible mouth, a rudiment of a ventral sucker, a primitive alimentary canal with peculiar, light brownish granular masses and no genital, muscular or nerve

tissues. The development of the oral sucker appears to Miyagawa to proceed much earlier than that of the ventral sucker which exists only as a tiny projection from the anterior third of the body.

The primitive gut is horseshoe-shaped, with the fore part closed and the posterior open, and ends in the anterior half of the body. Along this canal are peculiar light brown pigment granules probably identical with the pigment of the gut in the adult but finer. It was possible to identify the young worms discovered in blood from the peripheral veins with those from the portal blood. The same worms were found in the skin of the experimental animals. The young worms penetrate partly through the hair follicles, and in part directly through the healthy skin, and so enter not only the connective tissue spaces but also the blood capillaries. Thence they travel through the larger veins to the heart whence they subsequently reach the portal system. Whether they are carried in addition by the lymph stream is not yet clearly established but this is probable.

A comparison of these youngest worms with newly hatched miricidia reveals considerable differences and it is therefore concluded that *Schistosomum japonicum* most probably has an intermediate host.

ii. In the supplementary paper the additional fact is established that some of the infective agents of Bilharzia travel from the skin in the lymph stream. Miyagawa succeeded in recovering them from the thoracic duct and from lymphatic glands, but only in small numbers, in animals infected experimentally.

R. T. L.

TSUCHIYA. **Clinical, Pathological-Anatomical, Pathogenic, Prophylactic and Therapeutic Study of the Schistomiasis Japonica.**—*Sei-i-kwai Med. Jl.* 1913. Aug. 10. Vol. 32. No. 8. Whole No. 378. pp. 107-109. [The original in No. 10. Vol. 27. 1913 of the *Jl. Tokyo Med. Assoc.*]

From studies made in the Yamanashi province of Japan in May and the succeeding months of the year 1910, the author arrived at the following conclusions.

Mild cases of Japanese schistosomiasis may show no clinical symptoms. Infected persons can then only be detected by the determination of the presence of eggs of *S. japonicum* in the faeces. These may however be absent in some cases of undoubted infection "Kabure," an inflammation of the skin which occurs in the province does not seem to have any direct relations with the site of entrance of the virus of schistosomiasis.

During the initial stages of Japanese schistosomiasis a rise of temperature and symptoms resembling typhoid or paratyphoid sometimes appear, but the general symptoms are slight, the serum reaction is negative, and during the course of the disease there is marked enlargement and tenderness of the liver, and enlargement of the spleen. The faeces contain eggs. When the fever lasts over a period oedema and ascites frequently occur, and at times symptoms resembling those of dysentery are manifested.

The infectious period of the year appears to be from June till the end of October. No infection takes place during the cold months from November to April.

At times slight jaundice occurs in the later stages of the disease. In the last stage congestion of the portal circulation is the result not only of interstitial hepatitis but also, in severe cases, of endophlebitis and thrombus formation due to the irritation by the parasite producing haemorrhagic infarcts in the spleen and thrombosis in the portal system.

Infection invariably occurs through the skin. The parasites take seven to ten, rarely thirteen, days to reach the intrahepatic branches of the portal vein through the veins and lymphatic vessels. Once in the portal system they develop very rapidly and eggs are found in the faeces as early as one month after the date of infection while muco-haemorrhagic faeces are passed in 45 to 50 days.

The parasite seems to require most probably an intermediate host for its development, as all the worms hatched out of the eggs die within 40 hours, and all experiments to induce infection with them have failed absolutely. Attempts however to demonstrate an intermediate host experimentally have failed up to the present.

Prophylaxis consists, in the opinion of the author, in treating the cats and dogs that may act as reservoirs, with quinine. Faeces and urine should be stored so as to bring about the death of the eggs. Fujinami's methods of treating all dirty water with lime give good results where practicable. Individuals working in fields should be clothed and wear stockings and gloves made of closely woven material.

As treatment quinine in large doses and continuously is recommended.

R. T. L.

Distomiasis.

Sambuc (E.). **Distomatose pancréatique.**—*Bull. Soc. Méd.-Chirurg. de l'Indochine.* 1913. July. Vol. 4. No. 7. pp. 331-333.

The hitherto unobserved condition of infection of the pancreas by *Clonorchis sinensis* is now recorded. The patient in apparently good health died quite suddenly. At the post mortem a large number of flukes were found obstructing the bile ducts, and the duct of Wirsung and its branches. There was some indication of nephritis, but no other probable cause of death was noticed. The condition is considered very rare, as previous search of the pancreas in like infections has been negative.

R. T. L.

Taeniasis.

Nauwerck (C.). **Nochmals die "Durchbohrung des Duodenums und des Pankreas durch eine Tänie."** [Further Remarks on the Perforation of the Duodenum and Pancreas by a Taenia.]—*Centralbl. f. Bakt.* 1. Abt., Orig. 1913. June 21. Vol. 69. No. 5/6. pp. 434-436. With 2 coloured plates.

In 1900 Stieda and Nauwerck described a unique case of perforation of the duodenum and of the pancreas by a *Taenia*

saginata. Some doubts having been expressed by various writers as to the correctness of the interpretation of this case, the author now reproduces four photographs of the original preparations. [These illustrations leave no room for dubiety as to correctness of the original interpretation.]

R. T. L.

WATERHOUSE (R.). *Cysticercus cellulosae* **in the Central Nervous System; with an Account of Two Cases.**—*Quarterly Jl. of Medicine.* 1913. July. Vol. 6. No. 24. pp. 469-485. With 2 plates and text-figs.

Cerebral symptoms in an individual with cysticerci in the muscles or eye are probably attributable to the presence of similar parasites in the brain, especially if these symptoms comprise epileptiform convulsions, headache, giddiness, mental disturbance and vomiting. The occurrence of an eosinophilia in the cerebro-spinal fluid confirms the diagnosis. These cases otherwise are apt to be attributed to syphilis, or other cause, and should recovery occur whilst the patient is under specific treatment, the diagnosis is apt to be regarded as confirmed. Such errors would be generally prevented by the use of the Wassermann reaction. The clinical histories of two cases are given in detail and a series of instructive figures show the varying sites occupied by the wandering nodules or cysts at various periods.

The cerebral symptoms, which in one case commenced when the patient was the host of a tapeworm, attained their climax when the cysts in the muscles were at the height of their development, disappearing coincidently with their retrogression, to assume finally epileptiform convulsions which differed, as in other cases of the kind, from true epilepsy in the more gradual onset of the fits.

R. T. L.

BLANCHARD (R.). *Bertiella satyri,* **de l'Orang-outang, est aussi parasite de l'Homme.**—*Bull. de l'Acad. Méd., Paris.* 1913. April 15. Vol. 69. 3 sér. No. 14. pp. 286-296.

Several fragments of a tapeworm which were obtained from the stools of a girl of eight years of age from Port Louis in Mauritius by Dr. BARBEAU were sent to Professor Blanchard, and are described by him as belonging to the cestode, *Bertiella satyri,* hitherto known only from the Orang-outang of Borneo. There were six pieces amounting in all to 115 mm. and believed to belong to the same strobila. Four of these belong to the anterior portion of the worms and measure altogether 70 mm. The fifth portion is 30 mm. in length and 11 mm. broad at its anterior margin, the posterior being 12 mm. The last fragment 15 mm. long is 15 mm. across anteriorly and is rounded posteriorly in the manner which characterises the terminal segment of the members of the taeniidae. It is estimated that the complete worm would have measured at least 50 cms. in length and comprised several hundreds of segment.

The head is slightly elongated, and possesses neither rostellum nor hooks. It is not pigmented. The suckers are ovoid deep

and subcircular having a greatest diameter of 290 μ. The neck shows the first indication of segmentation about a millimetre behind the head. The segments increase in size very slowly and even the largest are still very short. The fourth fragment comprises 110 segments in a length of 28 mm., the greatest breadth being 4·5 mm. and the mean length 0·255 mm. There are 98 segments in the fifth fragment giving a mean length of 0·306 mm. with breadth varying from 11 to 12 mm. The terminal portion, 15 mm. by 15 mm., contains 26 segments, *i.e.* each has a mean length of 0·577 mm.

Whereas the segments do little more than double their length they increase in breadth more than four times.

The genital pores of the segment irregularly alternate, are small and difficult to see save in sexually mature segments. The cirrus pouch becomes evident about 20 mm. from the head. The uterus is transversely situated and shows on either side, *i.e.* anteriorly and posteriorly, a number of pouches or diverticula forming egg nests in the parenchyma. The eggs are round or oval and have three envelopes. The outer two are delicate; the innermost is thick, structureless, and transparent. At one of the poles the shell is thickened to form two little horns practically touching one another, with broad base and a short pointed tip. The diameter of this third shell is 20 to 25 μ and a thickness of 8 to 10 μ is attained where the horns are formed. The genus Bertiella (Bertia) is represented both in birds and mammals. The various species are given as follows:—

In Mammals.

In Primates.—*B. mucronata, B. cercopitheci, B. conferta, B. polyorchis, B. satyri, B. studeri.*

In Lemurs.—*B. elongata, B. plastica.*

In Rodents.—*B. americana, B. americana leporis, B. forcipata, B. laticephala.*

In Marsupials.—*B. edulis, B. obesa, B. rigida, B. sarasinorum.*

In Birds.

B. delafondi and *B. pinguis.*

The discovery of *B. satyri* in areas so widely separated as Mauritius and Borneo is no more remarkable than that of *Davainea madagascariensis* in Comores, Mauritius, Siam and British Guiana.

R. T. L.

ANKYLOSTOMIASIS.

MEIRA (Rubiaô) & PARANHOS (Ulysses). **L'Ankylostomiase au Brésil.** (Communication faite à la Société de Pathologie Comparée, dans la Séance du 11 février 1913.) 8 pp. [Imp. J. Thevenot, Saint-Dizier (Haute-Marne).]

This is an exhaustive summary of recent studies of ankylostomiasis in South America which are almost wholly inaccessible to European workers. The disease has been known in Brazil under the name "*Opilatio*" since 1845, and was first recognised

there as long ago as 1816 by HUMBOLDT. The earliest important Brazilian work however undoubtedly is that of JOBIM who proposed the name "intertropical hypoemia" for the disease in 1835.

The two ankylostomes are distinguished as "indigenous" and "imported." Out of 20,049 parasites collected from 110 patients 19,050 were *Necator americanus* and only 999 *Ankylostoma duodenale.* The two species were associated in no less than 38 out of these 110 cases.

It is stated that Gomes de FARIA and FEITOSA have infected themselves by applying necator larvae to the skin, and thus have confirmed for *Necator americanus* the original experiments made by Looss with *Ankylostoma duodenale.*

Dr. Marc DOWER has verified the existence of a haemolysin in the plasma of two out of seven cases of ankylostome anaemia, while Dr. O. PINTO has obtained a haemolytic action with *Necator americanus.* It would appear that, besides acting directly upon the red cells in the circulation, the haemolysin has some effect upon the haematopoietic organs.

ALMEIDA has noted that there is a degree of splenomegaly and hepatomegaly independent of, and much less marked than that occasioned by malarial infections. According to Meira there is in advanced stages an entire absence of free hydrochloric acid in the gastric juice, and the total acidity is considerably diminished. At the commencement of the illness, however, OLEVEIRA has observed a marked increase in chlorides, and in the total acidity. Blood is almost always present in the faeces but disappears after the patient is cured. The cardiac area is always increased, the right ventricle being especially liable to dilatation.

RABELLO gives as the characters of the blood: diminution of coagulability, of fibrin, of specific gravity, and of haemoglobin. A diminution of the red cells is not always noticeable: there may even be a polycythaemia due to diarrhoeic loss. Usually the haemoglobin diminishes to a greater degree than the red cells.

There is no leucocytosis. As a rule there is eosinophilia accompanied with a lowering of the neutrophiles.

The incidence of fever increases the proportion of neutrophiles and lowers that of the eosinophiles. In certain cases pseudo-eosinophile leucocytes are noted.

Usually a variable meta-basophilia occurs but only to a slight degree. The nucleated red cells occasionally seen are almost always normoblasts. When megaloblasts are present, they are fewer in number.

Dr. P. da CUNHA has studied the jaundice type of ankylostomiasis, rare in Brazil, in which typical jaundice is associated with yellow pigmentation of the sclerotics, with biliary pigment in the blood and a total absence of symptoms of biliary intoxication. These cases are characterised by anaemia, globular fragility and granular red cells. There is a constant disproportion between the greatly diminished haemoglobin and the increased number of the red cells; poikilocytosis, polychromatophilia and a strong hematopoeic reaction (nucleated red cells and myelocytes) are absent.

The mental perturbations associated with ankylostome infections are the subject of a monograph by Professor AUSTRAGESILO and Dr. H. GOTTIZZO of Rio, to which attention is directed.

It is the view of the authors that ankylostomiasis has not attained a grave character in Brazil. It is so widespread that had it been a fatal disease certain regions would soon have been decimated. Cachexia rarely occurs, and few of the sick reach the last stage without seeking treatment. Treatment adopted at Sao Paulo is thymol in 6 gram doses, taken fasting, in capsules of 1 gm. every fifteen minutes followed by a purgative. An iron tonic is given afterwards. The treatment may be repeated eight days after the administration of the first dose of thymol. This is persisted in until the faeces no longer contain eggs. The authors have never experienced the accidents attributable to thymol. The drug is always well tolerated but the dosage should be varied according to the age of the patient, the degree of anaemia, etc. The worms are expelled by hundreds and cases are not rare in which a thousand worms have been removed by a single dose.

Nothing in the direction of prophylaxis has yet been undertaken by the public authorities in Brazil but it is recognised that if the spread of the disease is to be controlled there is urgent need for state intervention.

R. T. L.

CONRAN (P. C.). **A Report on Ankylostomiasis in the North Nyasa District.**—*Jl. Trop. Med. & Hyg.* 1913. July 1. Vol. 16. No. 13. pp. 195-198; and *Nyasaland Protectorate Ann. Med. Report on Health and Sanitary Condition for Year ended 31st March,* 1913. pp. 68-72.

During a stay from June to December of 1912 in North Nyasa the author examined the stools of 622 individuals and obtained the following interesting results in Karonga and adjoining villages:—

Ova.	No. of infected persons.	Percentage.	Men percentage.	Women percentage.	Boys percentage.	Girls percentage.	Infants percentage.
Ankylostomum ...	211	40·42	44·0	42·67	30·0	32·35	45·83
Schistosomum ...	169	32·38	31·0	16·0	48·57	44·12	29·17
Ascaris	47	9·0	5·0	11·33	1·43	8·82	22·92
Trichocephalus ...	8	1·54	1·0	1·33	1·43	2·94	2·08
Negative	87	16·66	—	—	—	—	—
Total	522	—	—	—	—	—	—
At Fort Hill (Mambwe tribe in scattered mountain villages) :—							
Ankylostomum ...	13	—	15·79	16·22	12 0	5·26	—
Schistosomum ...	11	—	10·53	8·11	8·0	21·03	—
Ascaris	7	—	5·26	5·41	8·0	10·53	—
Trichocephalus ...	2	—	—	—	4·0	5·26	—
Negative	67	—	—	—	—	—	—
Total	100	—	—	—	—	—	—

The author remarks that the extent of the disease amongst children in the Karonga district makes itself evident in the exceedingly high infant mortality, disease from which a healthy child would easily recover proving fatal owing to lack of resisting power. He notes that the districts (Mwangolera and Mwambungo) with the highest percentage of ankylostome infections lie inland at some distance from the shore of the lake and derive their water supply from the upper Rukuru and its tributaries or from shallow pools: the districts of Chisindiri and Kambombo on the other hand are near the mouth of the river Rukuru and obtain their water supply from the Lake or the wide mouth of the river. [This contrast is not so evident in the incidence of schistosoma infection as will be seen from the appended table]:—

Ova.	Chisindiri.	Kambombo.	Mwangolera.	Mwambungo.
Ankylostomum ...	41·6	25·4	43·4	50·9
Schistosomum	31·6	38·1	38·5	38·18
Ascaris	3·3	6·3	13·2	10·9
Trichocephalus ...	—	—	2·4	—

Of the total number of persons examined in the Karonga district 28·54 per cent. had ankylostomes alone, 18·77 per cent. had schistosomes while in 11·85 per cent. only did the two infections occur together.

Most of the symptoms commonly described were met with but particularly emphasized were (most constantly) pain and tenderness in the epigastrium, dyspnoea, palpitation, weakness, dizziness, headache. Joint pains simulating rheumatism were common. Although many patients complained of passing blood with the motions, melaena was never observed in pure ankylostome infection but was always associated with schistosomes. In these cases there may be a close resemblance to dysentery, almost pure blood being passed with mucus, and accompanied with marked griping and tenesmus. The paper concludes with an interesting account of the local conditions with special reference to the possibility of enforcing prophylactic measures through the authority of village headmen.

R. T. L.

Wyler (E. J.). **Some Observations on Ankylostoma Infection in the Udi District of the Central Province, Southern Nigeria.**—*Jl. Trop. Med. & Hyg.* 1913. July 1. Vol. 16. No. 13. pp. 193-195; and *Southern Nigeria Ann. Med. Report for Year ending December 31st,* 1912. pp. 40-45. [1913. London: Printed by Waterlow & Sons, Ltd.]

This report [which appears in essentially the same form in the two publications above] deals with the results of an examination of the stools of 200 persons incarcerated in the Udi jail over a period of eight consecutive months. The individuals

came originally from over 65 villages scattered widely throughout the district approximately 1,537 square miles in extent, and are held to be representative of the general populace which numbers approximately 460,000. It is stated that hookworm infection is practically universal (199 positives out of 200) the average individual infection is a heavy one. Both species *A. duodenale* and *N. americanus* occur. Pure infections unmixed with other parasites are found to the extent of about 44 per cent. of the cases; in 12½ per cent. *Ascaris lumbricoides* is associated; and in 29 per cent. *Trichocephalus trichiura.* 79 per cent. of the population is anaemic but the anaemia is rarely profound. The pulse rate is normal in about half of those examined. Ground itch on the feet has not been observed. The people of the district exhibit generally a poor standard of physique, they have a marked incapacity as carriers and workers, and an obvious disinclination for bodily exertion in contrast to the Mendies, Kroo, Fantis, Yomba, Haussa and other coast tribes. This is probably attributable to the saturation of the inhabitants of the Udi district with ankylostome infection. [This paper acquires some importance from the fact that Udi promises to become a great coal centre. The construction of an important railway has just been sanctioned.]

R. T. L.

Breinl (A.). **Report on Health and Disease in the Northern Territory.**—*Bull. of the Northern Territory.* 1912. July. No. 1a. p. 10.

Ankylostomiasis has so far been observed in the Northern Territory of Australia in a few cases only. Three in 1908 and one in 1910. It was not possible to determine whether this disease was contracted locally, or whether the patients had brought the infection with them from other regions of the Commonwealth.

R. T. L.

i. Dinsmore (W. W.). **Hookworm Disease, a National Problem.**—*Southern Med. Jl.* 1913. Aug. Vol. 6. No. 8. pp. 498-506. With 8 illustrations.

ii. Boerner (M. H.). **The Hookworm Problem: Synopsis of the Work of the Hookworm Commission of the Texas State Board of Health.**—*Texas State Jl. of Med.* 1913. Aug. Vol. 9. No. 4. pp. 133-134.

iii. Judkins (O. H.). **Symptoms and Diagnosis of Hookworm Disease.**—*Ibid.* pp. 134-136.

These papers belong to the epoch-making chapter in the vast literature of ankylostomiasis which deals with the propaganda of Stiles and Wickcliffe Rose, the leaders of the Rockefeller Commission for the Eradication of Hookworm. The methods adopted have already been given in detail in the annotation

upon the official publications of the Commission (see this *Bulletin*, Vol. 2, p. 182).

i. Dinsmore's paper is of a popular character and is strikingly illustrated.

ii. Boerner states that 20,418 persons of all ages and both sexes have been examined at the special dispensaries during the nine months since August, 1912, and 8,892 (*i.e.* 43·5 per cent.) were found infected. The most heavily and most frequently infected class was the school child. Of children between six and eight years of age 5,775 out of 9,649 (*i.e.* 59·8 per cent.) were infected, while of 562 negroes only 57 or 10·1 per cent. gave positive results.

iii. Judkins, reviewing symptoms and diagnostic features, divides the infections into mild, medium, and severe. The first class contains many patients who present no symptoms recognisable as variations from the normal, yet after being treated, these often gain from five to ten pounds in weight and feel much better than before. In such cases mild digestive disturbances and discomfort in the epigastrium, presumed by the patient to be normal, are to be regarded as due to this cause. Many show also moderate pallor, lowered vitality and diminished energy. Children grow less rapidly and are not so bright mentally. The appetite is apt to be capricious, and attacks of gastralgia with occasional meteorism are noticeable.

In the *medium* class all these conditions are accentuated. The skin has a peculiar pasty appearance, and the mucous membranes are paler. The appetite is exaggerated or perverted; the tongue is coated and flabby, and there is epigastric tenderness. Palpitation is readily induced; there is mental depression and often stupidity. The haemoglobin in these cases ranges from 30 to 60 per cent.

Severe cases show extreme pallor, generally oedema, severe digestive disturbances, appetite enormous or absent, diarrhoea alternating with constipation, nausea, vomiting, and ascites. The patient is melancholic and complains of frequent headaches. There is extreme weakness, irregular fever and dyspnoea, severe palpitation and pericardiac pain. Heavily infected children are often "pot-bellied" due to dilatation of the stomach and intestines, and to increase in the mesenteric fat.

Acute infections often simulate typhoid fever or malaria.

R. T. L.

Stiles (Ch. Wardell) & Boatwright (Hal. F.). **Thymol Administration. Subjective Effects in 464 Administrations in 243 Patients.**—*U.S. Public Health Reports.* 1913. July 18. Vol. 28. No. 29. pp. 1497-1513.

The authors give in full details an important series of "subjective symptoms" reported by patients treated, from one to seven times each, according to circumstances, with the following "stock treatment." One or two preliminary doses of Epsom salts (at

5 and 8 p.m. or in the evening of two succeeding days), next morning thymol (divided into two doses at 6 and 8 o'clock or in three doses at 6, 7, and 8 o'clock) followed by salts at 10 o'clock. The results are summarised in their order of frequency in the following table:—

Symptoms, etc.	Treatments.	
	Number.	Per cent of total.
Total number of patients, 243.		
Total treatments	464	100·0
Ill effect absent	259	55·8
Ill effect present (as follows)	205	44·1
Sickness at the stomach (nausea)	66	14·2
Weakness	62	13·3
Burning in the stomach	45	9·7
Dizziness (including also "giddiness," "drunk," "staggery")	44	9·4
Headache	14	3·0
Vomiting	13	2·8
Burning in the throat	8	1·7
Pain in the stomach*	7	1·5
Drowsiness or sleepiness...	5	1·1
Sick after discharge from treatment	3	·64
Chill (apparently not due to treatment)	1	·21
Dyspnea	1	·21
Irregular heart following thymol	1	·21
Fainted	1	·21
Deaths	0	0·

* The term "stomach" used by patients does not necessarily correspond exactly with the anatomical term.

They remark that the most common complaint, *nausea*, was certainly due in some instances to the thymol, but in others it was attributable to the mag. sulphate.

The "weakness" noticed in 13·3 per cent., was at times due apparently to thymol or salts, but in other cases to the fact that the patients were allowed no breakfast. The number of complaints has been reduced by allowing coffee without milk at 9.30 a.m. and again, with crackers but no butter at 10.30 a.m. This is only partly efficacious however.

Some patients developed symptoms only at later treatments, others who showed ill effects at the first, had none subsequently An idiosyncrasy exhibited at the first treatment is not a necessary criterion of what may follow subsequently. Generally patients feel better when they remain in bed as much as possible until dinner time, but some cases have felt no ill effects when they have not done so. They conclude by urging that thymol and salts alone will not suffice to eradicate hookworm disease. The sanitary privy [and what it represents] is also essential.

R. T. L.

ARCHIBALD (R. G.). **A Case of Acute Agchylostomiasis treated by an Autogenous Vaccine of a Coliform Organism.**—*Jl. Trop. Med. & Hyg.* 1913. Sept. 1. Vol. 16. No. 17. pp. 260-262.

In a certain class of cases of ankylostomiasis the signs and symptomatology are out of all proportion to the number of worms obtained from the host. In the opinion of the author this is probably due to the presence of an additional toxic agent in the intestinal tract. The varying types of fever which sometimes occur and the persistence of pyrexia after the expulsion of the worms are difficult to explain on the supposition that the ankylostome is the sole causal agent. Processes of intestinal putrefaction are very marked in this disease. The author considers that the resultant toxins must necessarily affect the health of the patient, and makes a plea for the trial of vaccine therapy as a means, in serious cases, of tiding the patient over a "toxaemic time", previous to the exhibition of the anthelmintic, which being itself of a toxic nature, might have an injurious effect. The case cited gives strong support to the view that beneficial results can be obtained in severe and intractable ankylostomiasis by the employment of autogenous vaccines of the suspected intestinal organism along with, or prior to, specific anthelmintic treatment. The faeces were very offensive and alcoholic, and contained large numbers of adult ankylostome worms and their ova. Eucalyptus and chloroform in large doses produced little or no benefit and a fatal issue seemed imminent. An almost pure culture of a coliform organism was obtained by suitably plating out a specimen of faeces, and a vaccine of the organism was prepared. An injection of 500 million organisms was followed by immediate improvement. The tongue became clean and all the toxaemic signs disappeared. Five days later a dose of 1,000 million was used, and this was repeated subsequently at the end of a week. After the third injection the temperature remained consistently lower, the spleen and liver diminished in size, the patient commenced to put on weight rapidly, and was discharged from hospital shortly afterwards. The patient continued in good health and was able to carry on manual labour, although ankylostome ova were still present in the faeces.

[It may be well to point out here that the use of the spelling *Agchylostomiasis* is pedantic and has no justification in the International Rules of Nomenclature. These rules apply solely to *Nomenclature* not to *Terminology*. Thus, though we may consider it necessary, as some do, to use the generic word *Agchylostoma*, the fact does not invalidate the use of "Ankylostomes" and "Ankylostomiasis" in a descriptive sense.]

R. T. L.

ASCARIASIS.

LAMOUREUX (A.). **Fréquence du Parasitisme intestinal par *Ascaris lumbricoides* et par *Trichocephalus trichiuris* chez les Habitants de la Grande Comore.**—*Bull. Soc. Path. Exot.* 1913. June. Vol. 6. No. 6. pp. 455-457.

On account of the death from ascaridiasis of a young soldier from the island of Grand Comore the stools of 41 Comore individuals recently brought to Majunga in Madagascar were

examined. No less than 39, *i.e.* 95·1 per cent. were found infected by the *Ascaris lumbricoïdes* and *Trichocephalus trichiuris*; in association in 73·17 per cent.; by ascaris alone in 19·51 per cent.; and by trichocephalus only in 2·43 per cent. The high percentage in people coming from Grande Comore led to an examination of Madagascar natives living under the same conditions of life and food in Majunga. 31 artillery men gave only 3 (9·6 per cent.) infections:—two by ascaris alone and one with ascaris and trichocephalus in association.

In a foot-note it is stated that the infected inhabitants of Comore were feverish and had gastro-intestinal trouble. These fevers are frequently subject to relapse. No malaria parasites or spirochaetes were found in the blood. This fever is undoubtedly due to intestinal parasites and gives way to anthelmintic treatment. This remark is of importance in malarial countries where these relapsing fevers, diagnosed without blood examination, are frequently confounded with malaria.

R. T. L.

ALLEN (Mary D.). *Ascaris lumbricoides* **as a Complication of a Surgical Operation.**—*Jl. Amer. Med. Assoc.* 1913. June 21. Vol. 60. No. 25. pp. 1953-1954.

A remarkable case is recounted in which, after the evacuation of a large abdominal abscess a number of *Ascaris lumbricoides* appeared at intervals in the dressings and delayed the healing of the wound over a period of four months.

R. T. L.

GENERAL AND UNCLASSED.

TENNEY (Elmer S.). **Some Observations on the Prevalence of Intestinal Parasites in the Philippine Islands.**—*Amer. Jl. Trop. Diseases & Preventive Med.* 1913. July. Vol. 1. No. 1. pp. 44-48.

In 1912 the author found from an examination of the stools of a company of 100 Philippine scouts that *Ascaris lumbricoides* occurred in 52, *Trichuris trichiura* in 48, and "Uncinaria" in 24 cases. Since then a further series of 150 persons (comprising 121 Philippinos, 27 Moros, and 2 Chinese) examined has given the following results:—

		per cent.
Trichuris trichiura	67	44·6
"Uncinaria"	50	33
Ascaris lumbricoides	48	32
Strongyloides stercoralis ...	5	3·3
Dibothriocephalus latus ...	1	0·6

The term "Uncinaria" is used to include *A. duodenale* and *N. americanus* as the differentiation of these from the egg was impracticable.

An examination of the stools of 21 American residents, including officers of the army and of the Philippine Constabulary as well as several women and children, who had been in the Islands for over a year resulted in the following figures:—

	per cent.
Trichuris trichiura	9·5
Ascaris lumbricoides	9·5
"Uncinaria"	4·7
Oxyuris vermicularis	4·7
Strongyloides stercoralis	4·7

These results should be compared with those of Chamberlain, Bloombergh and Kilbourne (*Philippine Jl. of Science*, B., 1910, Vol. 5, No. 5), and Stiles and Garrison (*U.S. Hygienic Laboratory Bulletin* No. 28, 1906).

R. T. L.

Salecker. **Über Helmintheninfektionen bei den Eingeborenen der Marianen.** [Helminthic Diseases in the Ladrone Islands.]—*Arch. f. Schiffs- u. Trop. Hyg.* 1913. July. Vol. 17. No. 13. p. 463.

An examination of the stools of about 10 per cent. of the population of the island of Rota gave the following:—

Ankylostomiasis	83 per cent.
Ascaris	93 ,, ,,
Trichocephalus	89 ,, ,,

Many of the ankylostome carriers were very anaemic. In remarks upon the ankylostomiasis campaign in Guam the importance of a periodical examination is emphasized. In spite of a thorough course of treatment the children were found freshly infected seven months later.

R. T. L.

Bedson (S. Phillips). **Lésions des Organes a Sécrétion interne dans l'Intoxication Vermineuse.** — *Ann. Inst. Pasteur.* 1913. Aug. 25. Vol. 27. No. 8. pp. 682-699. With 6 text-figs.

From observations made upon guinea-pigs injected with sterile peri-enteric fluid from *Ascaris megalocephala* and filtered extracts of various tapeworms (*T. plicata*, *T. perfoliata* and *T. saginata*) the following conclusions are drawn.

Of all the organs of internal secretion the suprarenal capsule presents the most important lesions in acute or chronic verminous intoxications. The thyroid gland reacts equally but more especially in subacute and chronic cases. Only slight lesions occur in the hypophysis, pancreas, ovary and testicles.

The severity of the lesions in the suprarenals and thyroid is dependent more on the number of the injections and the duration

of the intoxication than upon the amount of toxin injected. Verminous products of ascarids and taenia produce identical lesions.

The reaction of the experimental animal to the verminous toxin is specific. In some cases the suprarenal capsule reacts quickly at the first injection of toxin, and even may present indications of hyperfunction. On the other hand the suprarenals may continue to show very little reaction.

The thyroid as a rule reacts but feebly to acute intoxication, but after intoxication of some weeks' duration extensive sclerosis obtains. It is stated in conclusion that the organs of internal secretion react quite similarly to verminous toxins as to those of microbic origin or to injurious chemical substances.

R. T. L.

FILARIASIS.

BREINL (Anton). **On Human Filariasis in Queensland and the Morphology of** *Microfilaria Bancrofti.—Australian Institute of Tropical Medicine. Report for the Year* 1911. pp. 18-23.

According to the author's short experience filarial infection in man is not uncommonly met with in Northern Queensland, but it is apparently not as prevalent as in and around Brisbane. A systematic examination of the patients who entered Townsville Hospital during three months showed that of 164 men examined five harboured embryos of *Filaria bancrofti* in their blood and of 60 female patients, two. The embryos evinced a well marked periodicity, being absent from the blood in the day and appearing at night. The author details some work on their morphology this being similar to that described by various workers in different parts of the world. As regards the pathology of the disease, in three cases of filarial swelling the varicose groin glands and the hyperplastic lymph vessels were removed and histologically examined. Only in one case, in the enlarged spermatic lymph vessels, could live adult female *F. bancrofti* be found. These agreed in every respect with the measurements and previous descriptions of this parasite.

On the histological examination of the enlarged lymph glands no marked pathological changes were evident. "The tissue, which caused the "soft swelling," consisted, on the whole, of loose, richly vascular fibrous tissue containing lymphocytic infiltration. Here and there, in parts which showed a greater amount of small celled infiltration, lymphocytes had collected in round or irregular follicle-like patches from 200 to 800μ in diameter. These lymph follicles occurred in varying numbers, were well defined from the surrounding tissue, and richly vasculated. As a rule, two areas could be distinguished, a peripheral one, consisting of lymphocytes, and a central one, consisting of more lightly staining cells, resembling the epithelioid cells of a tubercle. In all sections, especially in those of the lymph tissue surrounding the spermatic cord, numerous larger and smaller lymph vessels could be seen. The larger ones had a very thick wall and a wide lumen. Many of the larger lymph vessels, however, showed thrombus formation, the lumen of the vessel being filled by a fine loose meshwork of newly-formed connective tissue, and often nearly obliterated."

"Throughout the connective tissue haemorrhagic infiltration to a varying extent could be noticed. In some parts haemorrhage had taken place, the blood was being reabsorbed, becoming organised by connective tissue fibres growing in from the surrounding parts."

Only in one case was a dead adult *F. bancrofti* met with; it was seen on cross sections, surrounded by a thick layer of dense fibrous tissue.

A coloured plate illustrates the paper.

G. C. Low.

NYASALAND PROTECTORATE. **Annual Medical Report on the Health and Sanitary Condition for the Year ended 31st March, 1913.** p. 10.

Filariasis is rarely reported by Medical Officers in Nyasaland, elephantiasis of the legs or scrotum being seldom observed. It is, however, evident that in certain districts the existence of the infection may be readily demonstrated if the parasite is specially searched for. SANDERSON in the Ruo district, for example, examined 177 natives, blood films being taken during the day from 66, and from the remainder after 8 p.m. and was rewarded by finding embryonic forms of *F. bancrofti.* "Of the 66 natives examined between 8.30 a.m. and 4.30 p.m. positive results were obtained in five, or 7·5 per cent. Of the 111 examined after 8 p.m., filariae were found in as many as 31, which gives a percentage of 27·92. In none of the cases which yielded a positive result were there any signs of elephantiasis present." Only the one species of filaria, namely *F. bancrofti*, was found.

[The absence of *F. perstans* and *F. loa* in the 177 natives examined is interesting.]

G. C. L.

SALM (J.). **Un Cas de Filariose observé dans les Iles de la Sonde.**—*Le Caducée.* 1913. August 2. Vol. 13. No. 15. pp. 205. With 1 fig.

According to the author cases of filariasis in the Dutch Colonies are rare. The case of a man suffering from varicose groin glands is described, and an excellent photograph shows very distinctly the lesions that were present. These consisted of irregular soft tumour masses in the left groin and upper part of the left thigh. Embryo filariae were found in the night blood in small numbers, never in the urine nor in the fluid aspirated from the swellings. A marked eosinophilia was present, in one examination as high as 35 per cent.

G. C. L.

MAILLE. **Deux Cas de Filariose du Sang. Étude Hématologique.**—*Arch. de Méd. et Pharmacie Navales.* 1913. June. Vol. 99. No. 6. pp. 462-466.

Two cases of *Filaria loa* infection are described, in one of these Wassermann's reaction was obtained, this evidently meaning an infection with syphilis as well.

In the first case numerous filarial embryos were present in the blood. [The statement that an adult *Filaria loa* male was found in the blood is manifestly incorrect.] The second case was a typical one of Calabar swellings. The patient, a Frenchman, had been twice on the Congo and only developed the swellings on his return home.

G. C. L.

AUBERT (P.) & HECKENROTH (F.). **Action de Divers Médicaments sur les *Microfilaria perstans* et *diurna*.**—*Bull. Soc. Path. Exot.* 1913. June. Vol. 6. No. 6. pp. 457-459.

The authors first refer to the interesting results reported by THIROUX, D'ANFREVILLE and LEMOINE on the action of aniline

tartar emetic (*emétique d'aniline*) in filariasis. The authors tried the drug and various arsenicals on cases infected with *Filaria loa* and *F. perstans*. They found that as regards atoxyl, arsenophenylglycin, and "606" the results were entirely negative, while as regards the aniline tartar emetic they could not honestly say that it had any definite therapeutic action on the filaria. They call attention to the variability of the microfilariae in the peripheral blood, and rightly point out that unless this is taken into account wrong interpretations may be given to the action of drugs.

G. C. L.

v. d. Hellen. **Arsenpräparate und Filarien.** [Arsenic Preparations and Filariasis.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1913. July. Vol. 17. No. 13. p. 462.

Atoxyl and arsenophenylglycin were tried in the treatment of filariasis, but were found to be useless. No details are given.

G. C. L.

Bach (Fritz Werner). **Ueber die "Mikrofilarienkulturen" von Wellman u. Johns, nebst Bemerkungen über die Messung der Mikrofilarien.** [On the Microfilaria Cultures of Wellman and Johns with Observations on the Measuring of Microfilariae.]—*Centralbl. f. Bakt.* 1. Abt., Orig. 1913. July 29. Vol. 70. No. 1-2. pp. 50-60. With 1 plate.

The author repeated the experiments of Wellman and Johns [see this *Bulletin*, Vol. 1, p. 91] using the same species of filaria, namely *Dirofilaria immitis*.

In none of his cultures did he notice any appreciable increase in length of any of the embryos. In some, however, a slight increase of 20μ was obtained, but as this was also seen in controls in blood, to which nothing had been added, it cannot be taken as meaning anything. He cannot therefore confirm Wellman and Johns's results.

He mentions and agrees with Low's criticisms of the same paper [see this *Bulletin*, Vol. 1, pp. 91 and 420], where it was pointed out that the first stage of the development of the embryo filariae is one of breadth and not of length.

The second part of the paper is devoted to the longitudinal measurements of embryo filariae, their size when dead and when in the vagina of the adult female and the question of their agglomeration by sera.

[The paper contains many points of interest and shows evidence of very careful and accurate work.]

G. C. L.

Filarial Abscess.

Ziemann (H.). **Beitrag zur Lehre tropischer Gewebsentzündungen infolge von Filariainfektion.** [Contribution to the Knowledge of Connective Tissue Inflammations in the Tropics, due to Filarial Infection.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1913. July. Vol. 17. No. 14. pp. 469-493.

The author states that there exists in New Guinea a very characteristic form of connective tissue inflammation or purulent

suppuration, presumably due to filariae and found chiefly in the musculature. He pointed this out in the year 1904 and described the condition as a disease *sui generis*. He did so for several reasons:—

(1) On account of the tendency for the foci, especially in the lower extremities, to be multiple.
(2) On account of the successful results of surgical interference.
(3) On account of the frequent sterility of the contents of the abscesses.
(4) On account of the frequent absence of fever.
(5) On account of the majority being deeply situated and therefore in the beginning correspondingly difficult to diagnose.
(6) On account of the frequent absence of definite suppuration, the pathological lesions consisting of serous infiltration with small celled infiltration.

In many of the abscesses secondary infections with staphylococci and streptococci were found, but the author considers the primary etiological agent to be the filaria. He thinks the suppuration might be due to the death of the mother worm, or to an abortion of its eggs or perhaps partially to toxic products proceeding from the worm.

The condition was generally found in people with larval filariae in the blood, or in the absence of those a marked eosinophilia indicated the filarial nature.

As regards treatment the author advises waiting, if the pain is not too great and pus has not formed. Frequent blood examinations and careful records of the temperature should of course be kept. When pus forms the abscesses should be freely opened and treated on surgical lines.

The prophylaxis lies in the destruction of the Culicidae which act as intermediate hosts of the filariae.

[Similar cases have been referred to lately in this *Bulletin*, see Vol. 2, pp. 92-96.]

G. C. L.

Külz (L.) & Bach (Fr. W.). **Beiträge zur Kenntnis von** *Onchocerca volvulus* **Leuck. 1893.** [Observations on *Onchocerca volvulus* Leuck.]—*Centralbl. f. Bakt.* 1. Abt., Orig. 1913. Aug. 23. Vol. 70. No. 5-6. pp. 321-326. With 6 text-figs.

The specimens were recovered from tropical muscle abscesses by Schäfer in the Cameroons. They were sent to the authors from the Zoological Museum at Berlin. The worms were preserved in alcohol and were stained a light brown colour; they were coiled up together and in unravelling them many got broken. An examination showed them to be *Onchocerca volvulus* = *Filaria volvulus*, this species having been placed in the genus *Onchocerca* instead of in that of *Filaria* by Ralliet and Henry in 1910. Amongst the fragments two heads, two tails, and four headless and tailless bodies were found. Sketches of these are given together with measurements of the different anatomical

points, these being compared with those given by PENEL, PROUT, FÜLLEBORN, BRUMPT and PARSONS.

No clinical details were obtainable about the patients who had had the worms, but the authors point out that this parasite usually produces fibrous tumours. They also mention the frequency with which muscle abscesses occur in the Cameroons, but, from epidemiological and clinical researches, incline to the view that these are due to *Filaria loa* [see this *Bulletin*, Vol. 2, p. 92].

G. C. L.

BREINL (ANTON). **Investigation into the Morphology and Life History of** *Onchocerca gibsoni.—Australian Inst. Trop. Med. Report for the Year* 1911. pp. 5-17.

The observations given in this paper are of medical interest mainly as bearing upon the life history of the closely allied parasite of man *Onchocerca volvulus*.

Previous work by GILRUTH and SWEET had indicated the possibility that a tick was the intermediary host while CLELAND, on epidemiological grounds was led to suspect the stomoxys.

The author states the curious fact, which is regarded as more than a coincidence, that the nodules occur only in those parts of the animal which come into contact with the ground when the beast is resting, or in the water, when the cattle enter it for drinking or cooling purposes. It seems possible therefore that larvae may be able to penetrate the unbroken skin and thus gain access to water and a water-living intermediary. [It may be recalled however that *O. reticulata* is differently situated in the horse]. A large number of experiments were made which appear to show that in a few instances such a migration of embryos in small numbers does take place when the skin over nodules is kept moist, but it is concluded that this migration is of too rare an occurrence to be taken into consideration. It may be merely a pathological curiosity. Experiments made with *Stomoxys calcitrans* [c.f. LEIPER, *Bulletin*, Vol. 2, p. 196.] *Culex fatigans*, *Culicelsa vigilax*, *Mansonia uniformis*, *Hirudo medicinalis* and *Cyclops pallidus* n. sp. were entirely negative. Those upon the last named are apparently conclusive for although the larvae were repeatedly taken up by the Cyclops, no development resulted and after three to four days the worms were digested.

R. T. Leiper.

ELEPHANTIASIS.

MATAS (Rudolph). **The Surgical Treatment of Elephantiasis and Elephantoid States dependent upon Chronic Obstruction of the Lymphatic and Venous Channels.**—*Amer. Jl. of Trop. Diseases & Preventive Medicine.* 1913. July. Vol. 1. No. 1. pp. 60-84.

The author reviews some of the most recent suggestions which have been offered for the relief of elephantiasis and elephantoid states dependent upon chronic obstructions of the lymphatic and venous channels. He also describes the results of two recent cases operated upon by himself by the method of KONDOLEON of Athens.

By elephantiasis he means "a progressive histo-pathologic state or condition which is characterised by a chronic inflammatory fibromatosis or hypertrophy of the hypodermal and dermal connective tissue, which is preceded by and associated with lymphatic and venous stasis, and may be caused by any obstruction or mechanical interference with the return flow of the lymphatic and venous currents in the affected parts. In order to bring about the hypertrophy of the connective tissue, which is the distinctive feature of the true elephantiasic state, the mechanical impediment to the lymphatic and venous drainage of the part is not sufficient, because a simple mechanical obstacle, while causing a regional or localised dropsy or lymphoedema, will not bring about the characteristic fibromatosis and other histological changes which are peculiar to elephantiasis."

The histopathological elements which are essential to complete the picture of elephantiasis are according to Matas:—"(1) a mechanical obstruction or blockage of the veins and lymphatics of the region, usually an obliterative thrombophlebitis or lymphangitis or adenitis; (2) hyperplasia of the collagenous connective tissue of the hypoderm; (3) gradual disappearance of the elastic fibres of the skin; (4) the existence of a coagulable dropsy or hard lymph oedema; and (5) a chronic reticular lymphangitis caused by secondary and repeated invasion of pathogenic micro-organisms of the streptococcal type."

The association of a streptococcal infection of the erysipelatous type is an almost inseparable and constant feature of elephantiasis.

As causes of non-filarial elephantiasis—the so-called *Elephantiasis nostras streptogenes*—"injuries involving the circumference of the limbs at their root, or tumours blocking the deep lymphatics; chronic ulcers of the leg, syphilitic, tuberculous and phagedenic in origin; chronic phlebitis associated with varices, post-typhoidal, or puerperal; chronic eczema and kindred conditions," are given.

Mention is then made of the different operations which have been employed in dealing with the condition. Those of Kondoleon, Lanz, Rosanow and others have already been dealt with [see this *Bulletin* Vol. I, pp. 93 and 421, 422], as have also the experiences of Madden, Ibrahim and Ferguson in Egypt with Handley's lymphangioplasty operation [see this *Bulletin*, Vol. 1, pp. 92, 93]. As regards the results of his own case, in common with the opinion of the authors quoted, Matas believes that the evidence furnished is insufficient to prove that a curative method of permanent drainage in elephantiasis or in the elephantoid states has been found in Kondoleon's operation or in the other procedures (Lanz, von Oppel, Rosanow) of which it is a derivative.

He points out "that the principle of lymphatic derivation, by removing the aponeurotic barrier which separates the stagnant from the normal circulating lymphatic areas, is not free from theoretical objection. The excised aponeurosis is bound to be replaced by cicatrical tissue, which may block the path of the lymph stream and venous circulation as completely as the normal aponeurosis. The possibility remains, however, that by the

massive removal of the obstructing aponeurotic barrier new anastomising lymph channels and veins (which reproduce themselves with astonishing rapidity) may form between the vessels in the stagnant areas and those in the active, circulating, tissues, and that these will resist the contractile tendency of the newly formed cicatrical tissue. If in the meantime, all sources of dermal and hypodermal infection can be kept away by asepsis, and "antigenous" treatment, it is possible that a permanent drainage may be established. It is obvious that the possibilities of the new principle can only be tested by clinical experience and further observation," and it is with the hope of encouraging this that the author records these cases.

G. C. L.

OUZILLEAU. **L'Eléphantiasis et les Filarioses dans le M'Bomou (Haut-Oubangui). Rôle de la** *Filaria volvulus.*—*Ann. d'Hyg. & de Méd. Colon.* 1913. Vol. 16. No. 2. pp. 307-321.

The author deals fully with the question of elephantiasis and its treatment. The procedure adopted at Bangassou for the operation of elephantiasis of the scrotum and penis is given in detail, black and white sketches showing the lines of incisions and other points. In addition other forms of elephantiasis are described and pictured, lymph scrotum and adenolymphocele being included.

The disease as seen in the scrotum appears to be exceedingly prevalent at M'Bomou, BERNARD in 1911 having operated upon 154 cases (scrotum and penis 143, scrotum alone 5, penis alone 2, labium majus 4), while in 1912 the total number of operations for this condition was 182, the vast majority again being genital cases. The mortality after operation is insignificant. Elephantiasis is also seen in the limbs but is rare.

The paper is to be continued. No mention is made in this part of it of the supposed role of the *Onchocera volvulus* in the production of the disease [see this *Bulletin*, Vol. 1, p. 420].

G. C. L.

KUHNE & GUHNE. **Zur operative Behandlung der Elephantiasis scroti.** [Operative Treatment of Elephantiasis scroti.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1913. July. Vol. 17. No. 13. pp. 457-458.

The operative treatment of elephantiasis scroti is described. Some modifications of the usual technique are given.

G. C. L.

LÉGER (André). **Microfilaires sanguicoles de quelques Oiseaux du Haut-Sénégal et Niger.**—*Bull. Soc. Path. Exot.* 1913. May. Vol. 6. No. 5. pp. 359-367.

The paper deals with different microfilariae found in the blood of birds in the Upper Senegal and Niger, many of which were infected. The author gives the scientific names of the birds and the characteristics of the different filariae discovered in them, definite names not having yet been ascribed to these.

[Those interested in the subject should consult the original.]

G. C. L.

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United States Naval Medical Bulletin. 1907, April, Vol. 1, No. 1; 1908, Jan., Vol. 2, No. 1; and 1911, April, Vol. 5, No. 2.

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